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YELLOW FEVER SYMPOSIUM

Dr. Nájera on the Campaign in Mexico
Dr. Coello on the Campaign in Ecuador
Dr. Connor on Mosquito Larvacides

The Massachusetts-Halifax Health Commission
Dr. Fisk on Industrial Fatigue
Report on School Health Program
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THE CAMPAIGN AGAINST YELLOW FEVER IN MEXICO

FRANCISCO CASTILLO NÁJERA, M.D.
Superior Board of Health, Mexico

Read before the Laboratory Section of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 15, 1921.

YELLOW FEVER existed in Mexico even before the conquest. In some localities the disease has always been endemic, and from these centers epidemics have from time to time arisen. Mérida, for example, is thought to have been the endemic focus from which the last epidemic started. In 1903 the disease was widespread, extending to cities of the interior never before visited (Monterrey and Linares in the state of Nuevo León, Saltillo in Coahuila, Vallés and San Vicente in San Luis Potosí [see Table 1], and it was at that time that a formal campaign was instituted under Dr. Licéaga. The modern methods of sanitation and mosquito eradication were carried out with remarkable success. The disease was eradicated from the towns of the interior and has never reappeared there; even in Veracruz it was considered under control, and in other Gulf states (Tabasco, Campeche, Yucatán) only sporadic cases appeared. During the period from 1903 to 1912 our country was practically free from yellow fever, as shown by Table 2, in which are compared the incidence during the ten years before the campaign and that during the subsequent ten years.

That epidemics broke out again in 1920, notwithstanding the enforcement of sanitary measures, was perhaps due to the fact that in small towns the presence of a few cases of the disease in mild form had escaped notice. I also believe that yellow fever attacks children in the endemic regions; hence the immunity of the adults. This opinion is supported by the observations of Dr. Juan Graham Casasús, who has seen in Tabasco in non-epidemic periods many cases of disease in children which closely resembled yellow fever. Many cases of disease diagnosed in recent years as "hemorrhagic malaria" by physicians practicing in towns of both coasts may actually have been yellow fever. It is probable that yellow fever, like other epidemic diseases, attacks all susceptible persons in a given region. The immunity of the survivors and the enforcement of anti-mosquito measures minimize the opportunities for new cases to arise; the virulence of the germs decreases by less frequent passage, like that of other epidemic diseases, and such infections as occur are mild. The individuals with the mild disease, however, are germ sources, and if the mosquito index is not kept low the mild

cases continue to occur, gradually increasing in severity, until the organism regains its maximum virulence by frequent passage and sets up a new epidemic. No other explanation would account for the almost simultaneous appearance of yellow fever in widely separated localities without communication.

The first case appeared in Veracruz on June 8, 1920, and since that time cases have been reported in Tuxpam, Papantla, Gutiérrez Zamora, Alvarado, Tierra Blanca, all in the state of Veracruz, and also in other towns of the Gulf coast, and more recently on the Pacific coast. In Table 3 are recorded the statistics of incidence of yellow fever during 1920 and until the 10th of October of the present year. Since that date 4 cases have been recorded in Puerto Vallarta, in the state of Jalisco, a small, almost isolated port; none of the cases is known to have been imported.

1920 Campaign. Immediately upon the appearance of the first cases, active measures were instituted, including the isolation of infected individuals in special lazarettos, treatment with Noguchi's serum, and the vaccination of non-immune persons. The pools and swamps were petrolized and drained, and fish were used as larvacides in all water containers. All vessels were quarantined or subject to rigid sanitary inspection. We were able to control the disease in many localities, and by the end of the year 1920 yellow fever had almost disappeared, even in epidemic centers such as Tuxpam, where it had claimed numerous victims. Among the latter should be mentioned Dr. Teodoro López, of the Army Medical Corps, one of the first to enroll in the campaign. During the epidemic period Pérez Grovas conducted experimental work which confirmed the etiologic relationship of Noguchi's leptospira to yellow fever.

1921 Campaign. The Department of Health, confronted with the urgent necessity of intensifying the campaign, communicated with the Rockefeller Foundation and secured its coöperation. The President of Mexico issued on January 19 a decree establishing a special committee, composed of members of the Superior Board of Health of Mexico and the International Health Board of the Rockefeller Foundation, of which Dr. Theodore C. Lyster was appointed director, and Dr. Angel Brioso Vasconcelos of the Superior Board of Health, vice-director; the other members were Drs. Emmet I. Vaughan, Bert W. Caldwell, and M. E. Connor of the Rockefeller Foundation, General Enrique S. Orsonio, surgeon general of the Army Medical Corps, and myself representing the Superior Board. The committee, with the coöperation of the auxiliary members which it was authorized to appoint, worked out a general plan of campaign which was approved by the Board of Health. Mobile brigades, working under the direction of members of the committee or of its auxiliary members, conducted a campaign against the mosquitoes according to the best-known methods, draining and petrolizing swamps and pools, placing fish in water containers, and in addition controlling the distribution of vaccine and serum. Each brigade was composed of one inspector, four sub-inspectors, and four attendants, and there were enough brigades to visit the whole region. Quarantine and disinfection measures were carried out by the Army Medical Corps and the representatives of the Board of Health. In small communities it was easy to control the epidemics by isolation of the sick and quarantine of the town.

Cases suspicious of yellow fever occurred in August in Mazatlan and Manzanillo on the Pacific coast, and the director of the committee made an inspection trip there and organized a campaign in that region. In October cases appeared in Las Peñas. One member of the special committee went to Guatemala, where he carried out a similar campaign during July and August.

Table 3 shows the decrease in the incidence of yellow fever during 1921 as compared with 1920. In Tampico only one case has been recorded, and that was probably imported. In Mérida, where the local authorities enforce the regulations and the people obey them strictly, there has not been a single case, notwithstanding the fact that Mérida has been regarded as an endemic focus, and in Veracruz the last non-imported case occurred in March. There have been 8 cases in Tuxpam this year as compared with 187 in 1920. In Payo Obispo (Quintana Roo) one case was observed during September, probably imported from British Honduras, where the disease is known to exist. Drs. Connor and Rojas Aguilar devised covers of metal and wire which make all kinds of containers mosquito-proof; these are used in almost every house in Mérida. Troops sent into infected regions have been vaccinated, and the data will be published at the end of the year.

Up to October 14 the government expended 613,091.82 Mexican pesos, besides the 50,000 assigned to the special committee. Taking into consideration the expenses of local authorities and of the Rockefeller Foundation, as well as of the oil companies, the cost of the campaign during the first ten months of 1921 is calculated to have been 1,000,000 pesos ($500,000).

The First Yellow Fever Convention was held from October 15 to 19 in Mexico City and was attended by the members of the special committee and the representatives of the Superior Board of Health, 25 in number; it was presided over by Dr. Gabriel M. Malda, chief of the Board of Health, and Dr. Alfonso Pruneda, the secretary general. Reports of conditions in the various regions were rendered; Dr. Lyster made a general report, and Drs. Perrín and Pérez Grovas spoke with reference to their experimental work. The convention approved the plan of campaign for the next year, the main points of which are as follows: The republic is to be divided into six areas, and each is to be in charge of a member of the special committee or one of the auxiliary members. Representatives of the Department of Health in these areas will work under the direction of the committee members in charge, who will also select and supervise the personnel of the campaign. Anti-yellow-fever vaccination will be carried out extensively among troops, especially those sent into infected areas, and the data obtained will be published. Education of the public with respect to prophylaxis will be given especial attention, particularly through the schools, according to the plan suggested by the secretary general of the Superior Board of Health in his remarks at the third general meeting of the Yellow Fever Convention (October 18). The areas into which Mexico has been divided for the purpose of the 1922 campaign are as follows:

1. Tampico-Tuxpam, comprising the states of Tamaulipas, Nuevo León, and the northern part of Veracruz (to 20° latitude).
2. Veracruz-Tehuantepec, comprising the southern part of the state of Veracruz (below 20° latitude), the state of Tabasco, and all points located on the Tehuantepec Railway.
3. Yucatán-Campeche, comprising the states of Yucatán and Campeche and the territory of Quintana Roo.
4. Chiapas, comprising the state of Chiapas to the south of the Tehuantepec Railway.
5. Colima-Manzanillo, comprising the states of Colima, Jalisco, Michoacán, and Guerrero.
6. Mazatlán-Culiacán, comprising the states of Sinaloa, Sonora, and Nayarit.

The proceedings of the First Yellow Fever Convention will be published in the near future.

I must not conclude without reference to one of the subjects of discussion at the Yellow Fever Convention. Dr. Juan Guitéras (secretary of the Department of Health of Cuba) has expressed doubts regarding the specificity of Noguchi's leptospira. The confirmatory work of Pérez Grovas has already been referred

to. Perrín reported at the convention that he has found fatty degeneration in the liver of guinea pigs inoculated with *Leptospira icteroides,* contrary to Guitéras' statement that such degeneration is not found in experimental infection with this organism. Perrín presented histological preparations and will send his report on the subject to the Fifth Medical Congress of Cuba, to be held in Havana next December. The results of vaccination and serum treatment published by Noguchi (*Journal of the American Medical Association,* July, 1921) constitute further proof of the specificity of the organism. The opinion of Guadarrama and Graham Casasús, based on their work in the campaign, is that the vaccine is effective, and also the serum, when used during the first three days of disease. Guadarrama vaccinated 2,000 persons in Tuxpam, with the results shown in Figure 1, which is quoted from Noguchi's article. More vaccinations have been carried out in Tuxpam during the present year, but since only 8 cases of yellow fever have occurred there, the new figures do not change the result; it should be emphasized, however, that all of these 8 cases occurred in non-vaccinated individuals.

Rigorous execution and constant improvement of anti-Stegomyia measures, with the aid of vaccination, will ultimately lead to triumph, and in the course of the year 1922 we expect that yellow fever will be definitely eradicated from the Republic of Mexico. We shall thus contribute to the fulfillment of the great Gorgas' dream, to banish yellow fever from the world's surface.

FIGURE 1

COMPARISON OF YELLOW-FEVER INCIDENCE AMONG VACCINATED AND NON-VACCINATED PERSONS, CITY OF TUXPAM, MEXICO, 1920

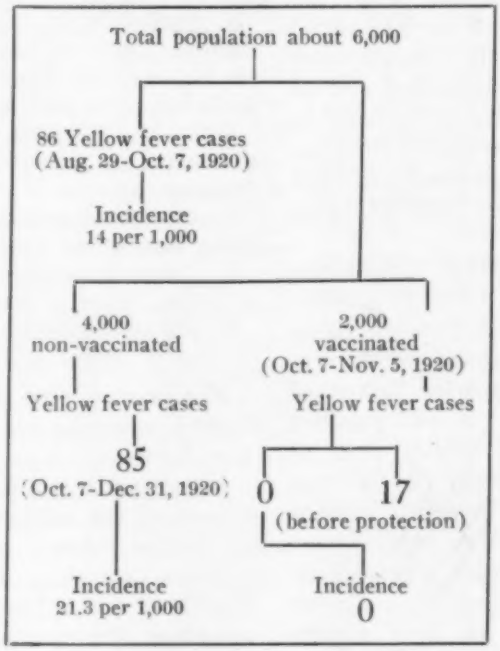

TABLE I

REPORT OF MORBIDITY AND MORTALITY FROM YELLOW FEVER DURING THE YEAR 1903

FEDERAL BOARD OF HEALTH OF MEXICO

States	Towns	Cases	Deaths
Campeche	Laguna	5	2
Coahuila	Saltillo	10	5
San Luis Potosí	Valles	9	9
	San Vicente	6	6
Nuevo León	Monterrey	483	291
	Linares	799	170
Oaxaca	Salina Cruz	29	14
	Tehuantepec	24	24
Hidalgo	Huejutla	16	9
Tamaulipas	Tampico	549	327
	Victoria y Cruillas	218	129
	El Paso de Doña Cecilia	81	40
	Nuevo Laredo	132	55
Yucatán	Mérida	108	87
	Progreso	5	3
	Valladolid	1	0
	Bahía de la Ascención	2	1
	Motul	2	0
	Citas	254	25
	Quintana Roo	1	1
Veracruz	Tantoyuca	7	3
	Pánuco	8	3
	Coatzacoalcos	2	1
	Córdoba	25	6
	Veracruz	1,072	372
	Totals	3,848	1,583

REPORT OF MORBIDITY AND MORTALITY FROM YELLOW FEVER FROM THE BEGINNING OF THE CAMPAIGN IN SEPTEMBER, 1903, UNTIL DECEMBER 31 OF THE SAME YEAR, IN THE CITY AND STATE OF VERA CRUZ

	Movement of Patients			Daily Work			
Year of 1903	Number of Cases Registered	Discharged as Cured	Number of Deaths	Number of Houses Disenfected	Number of Water Deposits Disinfected	Number of Houses Cleaned	Various Notifications
September	93	74	31	91	1,872	147	61
October	176	124	55	87	2,063	233	70
November	51	54	26	39	1,541	43	52
December	19	19	5	52	1,663	107	60
Total	339	271	117	269	7,139	530	243

TABLE 2

STATISTICS OF MORBIDITY AND MORTALITY FROM YELLOW FEVER IN THE CITY OF VERACRUZ FROM JANUARY, 1892, UNTIL NOVEMBER, 1912*

Years	January C[1]	January D[2]	February C	February D	March C	March D	April C	April D	May C	May D	June C	June D	July C	July D	August C	August D	Sept. C	Sept. D	October C	October D	November C	November D	December C	December D	—Total— Cases†	—Total— Deaths
1892.....	?	?	?	2	?	1	?	7	?	20	?	40	?	76	?	53	?	28	?	13	?	10	?	9	?	259
1893.....	19	5	7	1	9	6	17	8	41	17	91	32	105	29	70	8	65	9	11	11	5	5	9	0	449	131
1894.....	0	0	1	0	1	0	16	8	100	39	123	55	116	44	82	38	40	14	32	5	13	3	10	3	534	209
1895.....	8	5	7	1	2	0	5	2	24	12	60	23	106	40	53	36	25	17	7	3	4	3	0	0	301	142
1896.....	0	0	0	0	0	0	0	0	2	0	6	0	3	0	1	0	0	0	0	0	0	0	0	0	12	0
1897.....	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	0	0	1	0	1	1	0	0	5	3
1898.....	0	0	0	0	0	0	0	0	0	0	0	0	2	0	20	9	37	24	59	39	43	32	27	23	188	127
1899.....	12	10	8	5	10	7	29	11	302	155	468	193	214	96	109	57	55	32	32	15	7	4	22	9	1,268	594
1900.....	12	3	4	4	1	1	12	14	61	22	79	36	61	26	93	44	102	50	63	34	33	17	22	10	543	261
1901.....	8	1	5	1	0	0	3	2	1	0	8	4	13	6	13	7	16	5	65	19	94	31	43	27	269	103
1902.....	14	7	7	7	18	10	35	19	109	46	98	45	60	36	102	38	74	29	50	13	56	22	55	13	678	285
1903.....	23	12	14	9	17	5	27	8	45	17	111	36	153	50	241	91	189	§58	184	57	51	26	20	6	1,075	375
1904.....	4	1	3	2	2	0	1	0	5	1	11	3	9	1	25	1	8	0	0	0	4	2	1	1	73	12
1905.....	0	0	0	0	0	0	0	0	0	0	0	0	5	1	21	5	10	4	12	8	5	4	1	1	54	23
1906.....	4	3	1	0	0	0	1	1	0	0	0	0	1	1	1	0	3	2	0	0	5	4	1	1	17	12
1907.....	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	1
1908.....	0	0	0	0	0	0	0	0	0	0	0	0	3	1	6	6	5	3	11	3	5	2	13	5	43	20
1909.....	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	‖1	0	0	0	0	0	0	3	3
1910.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1911.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1912.....	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

COMPARISON OF THE MORTALITY FROM YELLOW FEVER FOR THE TEN YEARS BEFORE, AND THE TEN YEARS FOLLOWING, THE CAMPAIGN

Years	Deaths
1894	209
1895	142
1896	0
1897	3
1898	127
1899	594
1900	261
1901	103
1902	285
1903	228
Total for the ten years before Sept., 1903	1,952

Years	Deaths
1903	147
1904	12
1905	23
1906	12
1907	1
1908	20
1909	3
1910	0
1911	0
1912	0
Total for the ten years following Sept., 1903.	218

[1]C—Cases

[2]D—Deaths

*The data regarding cases registered from 1892 to 1903 were compiled by Dr. Manuel S. Iglesias, Commissioner of the Board of Health; those of the cases occurring during the subsequent ten-year period were gathered by the medical inspectors of the campaign staff.

†The cases recorded for the period from 1892 to 1893 are those observed in hospitals only; those recorded for the subsequent ten-year period include all cases which occurred in the town.

§The campaign against yellow fever was begun in September, 1903.

‖This case was introduced from Progreso on the steamer "Sonora." arriving September 23.

TABLE 3

CASES OCCURRING BETWEEN JUNE 8 AND DECEMBER 28, 1920

State	City	Cases	Deaths
Veracruz	Veracruz	202	87
	Tuxpam	187	97
	Papantla	61	30
	Others	35	21
	Total	485	235
Yucatán	Progreso	5	3
	Others	8	5
	Total	498	243
Tamaulipas	Tampico	5	4
	Total	503	247
Campeche		1	1
	Total	504	248
Territory of Quintana Roo		1	1
	Total of cases and deaths	505	249

CASES OCCURRING BETWEEN JANUARY 1 AND OCTOBER 10, 1921

Veracruz	Veracruz	17	6
	Córdoba	3	2
	Tuxpam	8	3
	Cosamaloapan	14	6
	Gutierrez Zamora	5	2
	Papantla	7	3
	Alvarado	1	1
	Tlacotalpan	1	1
	Campo Petrolero Alamo	4	1
	Purga	1	1
	Barra de penn	1	1
	Tierra Blanca	1	1
	Total	63	28
Sinaloa	Mazatlán	1	1
	Cualiacán	1	1
	Palmar de los Leales	12	7
	Total	77	37
Tamaulipas	Tampico	1	1
	Total	78	38
Colima	Manzanillo*	3	1
	Total	81	39
Jalisco	Tonila	1	1
	Total	82	40
Quintana Roo	Payo Obispo	1	1
	Total of cases and deaths	83	41

*There were 28 cases quoted as "Hemorrhagical Malaria," among which 10 deaths occurred.

THE PRESENT SANITARY CONDITIONS AT GUAYAQUIL WITH SPECIAL REFERENCE TO YELLOW FEVER

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Acting Assistant Surgeon, United States Public Health Service, Guayaquil

Read at the Third General Session of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 17, 1921.

YELLOW FEVER seems to be something of the past, something that no longer inspires special interest from the sanitarian, an enemy already defeated, something out of fashion. After the victorious campaigns carried on in Cuba, Panama, Brazil, etc., it seems no longer to demand special attention. However, for one coming from Guayaquil, the port that during three quarters of a century suffered from that calamity, and whose ill fame kept travelers away, fearing to approach its shores, and retarded commerce with other nations, it seems natural to speak once more of the place for so many years infected, but to-day free, due to the simple but efficient resources of modern hygiene.

The history of the main features of this successful campaign, and the present condition of what was formerly called "the Pest Hole of the Pacific Coast," may be of value to those interested in present-day sanitary problems.

Guayaquil, with a population of 100,000 inhabitants and an area of five square kilometers, is located on the western bank of the Guayas River, 45 kilometers from the sea and five meters above sea level. Its temperature fluctuates from 20° C. minimum in the cool season, to a maximum of 34° C. during the hot season. From June to December the climate is dry, temperate, and pleasant. During the rest of the year, the rainy season, the temperature reaches the maximum point, the mosquitoes appear and multiply rapidly and the atmosphere, loaded with humidity, is favorable for the development of germs and epidemics.

The streets, after the repeated destructive fires, were widened and straightened—the principal ones paved with asphalt. However, in the suburbs the streets, the patios, and the ground underneath the houses are totally submerged during the rainy season.

Two factors of great hygienic importance for a locality are very deficient in Guayaquil—water supply, drainage and sewerage system. The present water supply comes from brooks in the mountains, about 90 kilometers from the city. The pipe line parallels the line of the Guayaquil and Quito Railroad to the bank of the Guayas River, where it is carried under the river to the city. Its purity is more or less satisfactory, as it is found to contain only a moderate number of B. coli, probably not of human origin. But the amount of water supplied to the city during the twenty-four hours is very small (2,000,000 liters or 20 liters per capita); it should and will be increased at any cost to reach at least an amount five times larger. This insufficiency of volume of potable water, as well as the fact that it runs through the mains only two or three hours a day, causes people to store the water in tanks, cisterns, barrels, etc., thus affording first-class breeding-places for the mosquito.

Toward the southwestern part of Guayaquil there are large marshes which are periodically flooded by the flow of the Estero Salado (a bayou running from the gulf). This water fortunately is brackish enough to prevent the development of the *Aëdes calopus*.

It is probable that yellow fever existed in Ecuador long before 1842, and early historians tell of the occurrence of fevers, violent and fatal, that attacked the pirate crews during their frequent

incursions; and although in a vague manner, they described a disorder that befell the foreigners, which was thought to be the so-called "Siam's disease." Anyway, it is only in the year already cited that we have an official statement of its appearance, imported by a vessel bound from Panama, causing an epidemic that, even disregarding exaggeration, was notable for its frequency and high mortality. Since then the disease has disappeared, apparently, to reappear when a sufficient number of non-immune newcomers and the presence of the mosquito in sufficient number have permitted, according to Dr. Carter's theory, the propagation of the infection brought in by some imported case. Did the yellow fever really disappear from Guayaquil on account of lack of non-immune population, diminution of mosquitoes (Guayaquil had at that time a population not one-half of the present), or were there only periods of latency during which the disease was reduced in intensity and frequency, and would become active with a change of conditions?

Dr. Pareja, at present chief health officer of Ecuador, a former member of the Rockefeller Yellow Fever Commission, in a paper read before the Society of Tropical Medicine (Atlantic City meeting, 1919), expressed his view that yellow fever probably did not disappear from Ecuador before 1919.

The fact is that frequent outbreaks at irregular intervals made a heavy load for the public welfare and progress of the country, and although combated in a certain measure, nothing could be done to stamp it out from the country entirely. The native physicians interested in public-health work followed with interest the admirable work of Finlay, Reed, Carroll, Agramonte, the sacrifice of Lazear, as well as the efficient, successful work of General Gorgas, at Havana and Panama, and of Dr. J. H. White, of New Orleans. However, they could not accomplish much because of the lack of education of the public, and the extended impression that Guayaquil, to get rid of the yellow fever, needed a system of water supply, drainage and sewerage that would abolish the receptacles, tanks, barrels, etc., and in that way make the anti-larvae campaign an effective one.

Meanwhile, the damage caused to lives and commerce of the republic was considerable. People and capital were kept away by a reasonable fear. The quarantine restrictions were very stringent; northbound boats had either to pass by the port of Guayaquil or to take seven days before reaching the next foreign port, in addition to the duty to anchor 2,000 meters below the usual place, and stand a three hours' complete sulphur fumigation, measures very well justified on account of the circumstances.

"The insanitary conditions of Guayaquil is a subject for serious consideration by all the American republics with whose ports it has commercial relations." (American Public Health Report, 1909.) "Guayaquil is the worst infected port in the Western Hemisphere." This and like expressions were frequently found in official documents referring to our port.

During 1915 there was a notable diminution in the number of cases of yellow fever in Ecuador, there being 19 cases reported. They were so rare that for a time the presence of the disease was seriously doubted. Opportunities, however, were offered to perform autopsies of some suspected cases, and the presence of the disease was confirmed as a result of the post-mortem findings. The probabilities are that most of the cases having been atypical, failed to be properly diagnosed.

Before this epoch the United States Public Health Service, with the purpose of facilitating the reception of ships in the American and Canal Zone ports, detailed an officer of the organization to be stationed in Guayaquil, attached to the American Consulate, to see to the fumigation of ships, inspection of crews and

passengers, vaccination, etc., and to report about any condition affecting the public health. In 1909 this officer happened to be Passed Assistant Surgeon Bolivar Lloyd, to whom the Ecuadorean Government recommended the reorganization of the Health Service, with the consent of the Secretary of Treasury and approval of the State Department. At this time the present system of statistics began, a new set of laws and regulations concerning public health was issued, and the organization placed upon a new basis. In 1913, through the suggestion of the Ecuadorean Government, the Panama Canal Zone authorities sent a commission presided over by General Gorgas, for the purpose of making a survey of the hygienic conditions of Guayaquil.

In June, 1916, another commission arrived at Guayaquil, composed of General Gorgas, Dr. Carter, Dr. Guiteras, Dr. Lyster, sanitarians Wrightson, Whitmore and Wakefield, for the purpose of studying yellow fever, on behalf of the Rockefeller Foundation and the possibility of starting an efficient campaign against the disease. The aim of the Foundation, according to the declaration of the commission, was to send sanitarians, experts in yellow fever, to work in coöperation with the local health authorities, to offer pecuniary help when necessary, to supply certain materials like wire screens, and similar aid for such work. This generous offer was accepted by the Ecuadorean Government, and following this agreement another commission, composed of Drs. Kendall, M. Lebredo, C. A. Elliott and Mr. Redenbaugh, arrived in July, 1918. A few days later Dr. Hideyo Noguchi joined them. This commission having for its purpose the study of sanitary conditions, the localization of smaller foci, the clinical varieties of the disease, the inspection of the work done, the estimation of the work to be done, and the discovery of the causative germ of the disease, started to work immediately.

Dr. Elliott performed very important clinical work, about which he reported to the American Society of Tropical Medicine at the Atlantic City meeting in 1919, and Dr. Noguchi, after prolonged and most painstaking investigation, discovered the spirillum now generally accepted as being the causative agent of yellow fever. The history of this important discovery, with its details, has been published in the *Journal of Tropical Medicine*.

Dr. Kendall and Dr. Lebredo submitted a report on Guayaquil conditions to the International Health Board, dealing with the sanitary aspect of the work.

In November, 1918, Dr. M. E. Connor, of the International Health Board, arrived in Guayaquil and announced his purpose to coöperate with the Ecuadorean public-health authorities, starting work at once. With the prestige of his previous successes in Panama, the Philippines and Central America, he was appointer Sub-director de Sanidad, with all the rights and authority of the law and regulations.

Dr. Connor started at once on his antilarvae campaign, organizing a field force in proportion to the area, dividing the city into districts. To every one of them a personnel was assigned, making an intelligent and extensive propaganda to secure the coöperation of the populace, inspecting every deposit of fresh water capable of affording a breeding-place for the *Aëdes calopus*, which, as we know, deposits her eggs only in fresh water, clean and undisturbed—a home mosquito that does not live in the open field, and does not get very far from its breeding place. This was a favorable circumstance in the fight against it. The plan of the campaign was to make war on the larvae, preventing the laying of eggs, and destroying those already found, and although isolation and fumigation were also practiced, they were of secondary importance.

As it was impracticable in some sections of the city to keep the receptacles

covered all the time, due to the necessity of using the water therein contained, the use of some small fish was adopted (the millions and the chalacos), which voraciously devoured the larvae.

The result of this work can be appreciated by a glance at the following table:

Period	Cases of yellow fever
Year 1918	460
Year 1919 January	85
February	43
March	17
April	3
May	2
June	0
July to December	0

The details of this work, as reported by Dr. Connor, were printed in the *Journal of the American Medical Association* (English and Spanish editions), and reprints of the same have been circulated.

Thus, the last case of yellow fever in Guayaquil, according to official information, occurred on May 22, 1919, no other case having been reported since. Some suspicious cases have occasionally caused a good deal of alarm to the authorities, but investigators have failed to demonstrate at post-mortem examination any characteristic pathological changes.

Dr. Connor, having turned over the duties of his office to the Ecuadorean health authorities, left the country, having received from the government and the people of Ecuador expressions of appreciation for the benefit received. In connection with this, it is worthy of note that the most important difficulty with which our sanitarians have always had to contend, the opposition of the lower classes, did not occur in Guayaquil at all; not even indifference, as so well pointed out by Dr. Carter in cases like this, was felt in Guayaquil, where popular coöperation was readily secured.

The long time during which the city has been suffering from the epidemic, the losses suffered, the depression, the relative isolation—all these things were very well known by the people, and brought home the necessity of getting rid of that handicap and of helping along in the work to that end.

The Ecuadorean Public Health Service, after having received from Dr. Connor the direction of the anti-yellow fever campaign, took up the second part of it, the maintenance of the work, and the carrying on of the sanitary program as laid out and already established. Thus, although with a smaller but more expert personnel, the vigilant fight against the larvae has been continued. The index of the mosquito transmitter of the disease is maintained below five per cent, a percentage that the health authorities are trying to reduce, and will reduce to a point still lower. Tanks are kept covered and sealed, barrels and receptacles, when necessary to keep them open, are supplied with fish, and, what is most important, through popular education, willing and efficient coöperation is shown by the people.

Will yellow fever reappear in Guayaquil, or is it eradicated forever? According to the accepted theory, there are three factors necessary to its recurrence: A non-immune population, a new imported case, and the intermediary host. In Guayaquil at least two of these are lacking—a new case and the mosquito. During the last two years, after the last case of the disease, the proportion of non-immune population has been kept fairly constant by the influx of foreigners as well as by the newborn children (newcomers also), so that if the other two factors were to occur, namely, a new case of the disease and the presence of the mosquito transmitter in due proportion (the critical point raised by Carter), surely the epidemic would reappear. But the *Aëdes calopus* now exists in a proportion of five per cent or less, a ratio that the sanitary service aims to reduce to three per cent. Even in case of the introduction of a person infected with yellow fever, therefore, such a case

would end in death or recovery without contagion, because of the lack of an intermediary host; i. e., the host is not present in sufficient numbers to propagate the infection. The introduction of the case itself into the country on the other hand would be very difficult, even though yellow fever existed in one of the neighboring countries, because at the present time the restrictions on vessels from infected ports make it practically impossible for an importation to occur, and the campaign against the disease is being pushed with energy and skill at every point in America.

Guayaquil, is to-day free from the feared calamity, and American sanitarians are to be credited once more with success. It is true that we have other clinical conditions that perhaps threaten the life and interests of the country more than yellow fever, namely, tuberculosis, malaria, uncinariasis (with which ninety per cent of our population is thought to be infected), amebiasis, syphilis, etc., but yellow fever had something of a local character, without specific treatment, and with a selective affinity for foreigners. Being free from it, all our energies and resources can be concentrated against the others. Meanwhile, the bad reputation of our port is rapidly disappearing; it is already known by all the countries that have commerce with us that Guayaquil is a healthful, reliable town, where all desirable immigration is welcome and has opportunity to develop industrious and fruitful activities. The quarantine regulations, at one time very strict, as has been mentioned, are to-day very liberal, only the inspection and fumigation of holds and crew's quarters for the destruction of rats, in addition to anti-smallpox vaccination, being required.

As a consequence of the change of conditions, the movement of immigrants through the port of Guayaquil has increased, as can be seen by the following tabulation:

Years	Passengers entering the port of Guayaquil
1916	2,997
1917	2,969
1918	2,325
1919	2,988
1920	4,240
1921 (first 10 months)	3,430

The visits made by the distinguished sanitarians to the port of Guayaquil for the past two years have had a favorable influence on the movement toward sanitation. Dr. S. B. Grubb, then chief quarantine officer of the Panama Canal, was the first to come to Guayaquil in 1920 and the modification of quarantine resulted from his visit. Dr. Carter, on his way from Peru, stopped over at Guayaquil to observe conditions, and Dr. J. H. White, assistant surgeon general of the U. S. Public Health Service, on an inspection trip to Ecuador and Peru, called twice at Guayaquil, and his visit had a remarkably beneficial effect on the public-health activities.

Among the native physicians the tendency toward the study of sanitary science and preventive medicine is marked, and the idea that medicine is intended only for the treatment of the sick no longer prevails. To mention only those living in Guayaquil, Dr. Wenceslao Pareja, chief sanitary officer, Dr. Alfred J. Valenzuela, Dr. José Di Moral, and one or two more, have distinguished themselves by the publication of their articles on hygienic subjects.

The Sociedad Medico Quirúrjica del Guayas, our leading medical organization, has a permanent commission of public hygiene, and aims for the development and progress of this science, due importance being given to the old axiom that is so well known, but so little practiced, that prevention is more important than cure.

NOTES ON THE USE OF FRESH WATER FISH AS CONSUMERS OF MOSQUITO LARVAE IN CONTAINERS USED IN THE HOME

Based Upon Experience in Guayaquil, Ecuador, and Mérida, Yucatán, Mexico

M. E. Connor, M.D.
Senior State Director, International Health Board

THE present day campaign to control yellow fever or to eradicate an endemic center of this disease is based solely upon the reduction of the *Aëdes calopus* by anti-larvae measures to a theoretical minimum called the "safety index."

As early as 1908, Carter suggested that anti-larvae measures alone should be sufficient to check the spread of yellow fever and that, faithfully applied for a reasonable time, they should completely clear an endemic yellow fever center. He held that isolation or even screening the sick, the reporting of cases, and the fumigation of infected homes were unnecessary.

The initial campaign to be conducted exclusively along anti-larvae lines was carried on by Converse at Iqüitos in 1913. Beverley applied the same measures with success at Buenaventura, Colombia, in 1916. The first large endemic center to be cleared by strictly anti-larvae measures was Guayaquil, Ecuador, in 1919. Here, for the first time, the systematic use of fish was depended upon to destroy mosquito larvae in fresh water containers.

Unquestionably, a modern water system carrying an abundant supply of potable water, available to the majority of homes at all hours of the day and night, is the measure to be recommended for the permanent elimination of yellow fever from endemic centers, and for rendering other areas non-infectible. Financial considerations, unfortunately, make such a system impracticable for many communities where yellow fever is present. It is in such communities that the sanitarian must resort to the next best plan.

The systematic use of fish in fresh water containers has so simplified the problem, and so shortened the time necessary to reduce the *Aëdes calopus* to the safety index, that it is now accepted as the first temporary measure to be employed in yellow fever areas where fish are available and water is stored in reasonably large containers, such as tanks, barrels, or cisterns. In desert areas such as Carter encountered in Peru, where fish are not to be had, or in communities where the water is stored in receptacles too small to support fish life for the time necessary to conclude a campaign, the mosquito larvae may be removed from the water containers by straining the water through a cloth.

With the exception of metal tanks, for which no satisfactory fish has yet been discovered, fish can be employed as larvae destroyers in all classes of reasonably large water-storing receptacles. The four factors needed to insure their effectiveness are:

That the fish be in a sound condition when placed in the container.

That the water in the container receive sufficient air to support fish life.

That the container be protected from the sun.

That there be placed at the bottom of the container, against the side, a cave-like arrangement beneath or behind which the fish can rest or can hide when frightened. A condensed milk can, a curved piece of earthenware, or an elevated stone device made by resting a flat stone on two other stones, will suffice.

As a general rule, all fresh-water fish that can adapt themselves to the confines of containers will consume mosquito larvae. I have used with excellent re-

sults species of top minnow, carp, pike, mullet, and perch, and also shrimp and small turtles. Unfortunately, some species of fish which consume great quantities of mosquito larvae are unable to adjust themselves to the narrow limits of the average container. These usually free themselves by "jumping," or else become sluggish, and sicken and die. At Guayaquil the "huijas," a most satisfactory destroyer of mosquito larvae, would throw itself three feet into the air in its efforts to escape from a barrel.

Larvae-eating fish may be roughly divided into "top feeders" and "bottom feeders." All top-feeding fish are most effective where there is plenty of sunlight. They seem unable to locate larvae in dark containers, such as partially covered tanks or cisterns. They are very satisfactory when placed in swimming pools, pilas, fountains, and other open receptacles. Here they not only thrive, but increase in numbers, and keep the containers continually free of mosquito larvae. It is the bottom-feeding fish, however, that have up to the present given the best results in reducing the *Aëdes calopus* index in both Mérida and Guayaquil.

In Mérida the following was the procedure for stocking the various types of containers:

Aljibe or cistern, one fish only, preferably male ..... Bottom feeder
Well, if filled from below, two or more ..... Top feeders
Well, receiving rain from roof or patio, one or more ..... Bottom feeders
Barrel, one fish only ..... Bottom feeder
Pila, fountain, etc., two or more. Top feeders

The usual method of securing a supply of fish for containers is to arrange with local fishermen to furnish a fixed number at stated periods. The contractor delivers the fish into a prepared pila, well, or cistern, being paid only for live fish. These are allowed to rest a few days before distribution begins. The cost varies with the supply and demand, averaging from one-half to one cent each. A pin-hook with raw meat is used to catch the fish. The injury resulting from the pin-hook is a very slight one, from which the fish readily recovers; less than two per cent so caught have died. When fish are plentiful a "throw net" is used.

While the fish are in the health department's pilas they receive a small ration of white bread daily. Once distributed, they must feed upon such material as is to be found in the water containers. The health service does not advise or encourage home feeding of the fish, for fear they will be overfed and become too sluggish to hunt larvae.

Fish are distributed in the following manner to the staff in charge of control measures: Each district inspector anticipates the day's needs and notifies the central office, which in turn submits each list to the man in charge of the pilas. This employee takes from the pila the number of fish requisitioned, all being selected for their size and apparent soundness, and delivers them to the central office. Here the district inspector receives a day's supply, which he places in a five-gallon pail half filled with clean, fresh water. It is necessary to change this water frequently during the day to insure the fish sufficient oxygen to keep them in fit condition to be transferred to their new home. Unless this small detail is observed, many fish will die soon after being placed in a container, thus prejudicing people against the experiment.

The question frequently arises as to the possibility of fish excrement contaminating the water. This might occur if a large number of fish were placed in a container holding a small quantity of water. To avoid such a contingency, inspectors are instructed to place one fish, preferably a male, in receptacles holding drinking water.

In the case of pilas, fountains, and similar containers, the foregoing possibilities do not have to be considered. The health department may, therefore, use this class of receptacle as hatcheries, and thus assure a future supply of fish adapted to life in small containers.

WORK OF THE MASSACHUSETTS-HALIFAX HEALTH COMMISSION

B. Franklin Royer, M.D.
Executive Officer, Halifax, Nova Scotia

Read before the Public Health Administration Section of the American Public Health Association at the Fiftieth Annual Meeting, New York City, February 14, 1921.

On the 6th day of December, 1917, the "Mt. Blanc," loaded with high explosives, collided with the "Imo" in Halifax Harbor, resulting in one of the greatest explosions of history. In the twinkling of an eye, two thousand homes were completely destroyed, many thousands of homes were seriously damaged, 1,635 persons were killed and thousands of others were crippled or injured. In large areas in the city of Halifax, in the town of Dartmouth, and in several settlements adjacent to each, practically all residences were completely knocked down and in some instances such remains as were left standing were destroyed by fire. The concussion from this explosion was so tremendous that it was definitely felt at points sixty miles away, and in one instance was even reported one hundred and twenty miles away.

On the very day of this terrible disaster, within a few hours after the explosion occurred, the good people of Massachusetts sprang to the assistance of the stricken community. Relief trains, fully equipped with supplies, doctors and nurses, were on the way to Halifax hours before telephone and telegraph communication had been reëstablished.

Later on, a Massachusetts-Halifax Relief Committee was organized and three-quarters of a million dollars was raised for continuing the emergency relief. A local committee in Halifax, of which Dr. G. Fred Pearson was chairman, was designated to distribute the supplies and monies contributed. This local committee's work has received only the highest praise from citizens of the community.

After the period of emergent relief had passed and the Dominion Government had organized its relief commission on a basis of unprecedented magnanimity, there remained unexpended in the hands of the Boston committee approximately $250,000. Before determining what should be done with this large balance, the Boston committee consulted with their local representatives in Halifax and finally decided to have a complete study of conditions and needs made by a neutral person. Dr. Victor G. Heiser, director for the East of the International Health Board, was fortunately secured, and during the summer of 1918 he reviewed health conditions and needs as he found them following the explosion, and from available statistics, for a period of seven years prior to the disaster. On his recommendation, the Boston committee determined that the unexpended balance might best be utilized, if agreeable locally, in an endeavor to improve public-health conditions in the city of Halifax and in the town of Dartmouth.

Dr. Heiser pointed out specifically that because of overcrowded conditions, certain to obtain during the years required for restoration and rebuilding and during the years of rehabilitation, much greater public-health effort would be required than formerly to prevent death-rates from rising. Feeling that the time was opportune for inaugurating an advanced public-health program, it was recommended to the Boston committee that this money be expended in a public-health and preventive medicine campaign to extend over a period of five years, and in order that the demonstration might be complete and satisfactory, the recommendation provided for endorsement by the provincial and city government in ad-

vance, and that each should make substantial contributions, $5,000 annually in the way of funds or facilities, for carrying out the program. It was also recommended as advisable that the Halifax Relief Commission, an organization doing splendid work as the government's agent, in settling claims, rebuilding and rehabilitating the community, should provide a sum of $15,000 annually for five years, with the understanding that certain of the terminal medical and social work in connection with rehabilitation be done by the new organization. These sums would provide $75,000 a year for a population of a little less than 75,000.

Dr. Heiser's recommendations were agreeable to the Boston committee, as well as to the Halifax Relief Commission, and the provincial and local departments of health. A great deal of time was consumed in securing the approval of the agencies concerned. All agreed finally and it was considered advisable to have a special commission created to carry out the public-health program recommended. It was not until the latter part of May, 1919, that an enabling Act of the Provincial Legislature was passed, making possible the organization now known as the Massachusetts-Halifax Health Commission.

The various members of the Commission were appointed during the summer of 1919. The commissioners met for organization on September 22 and for conference with social and welfare agency representatives of the community on September 25. The present executive officer was secured on the first of October, 1919, and the public-health and preventive medicine campaign was launched as rapidly as possible during the latter part of 1919.

Dr. Heiser's constructive recommendations provided for an executive officer, public-health nurses, a broad gauge public-health educational campaign, modern supervision and treatment of milk and water supplies and modern sanitation in every particular.

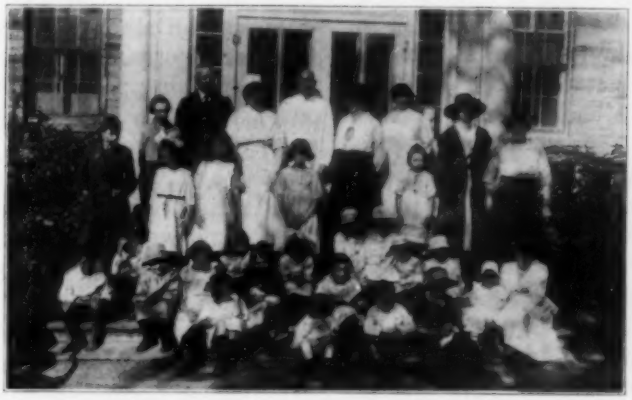
In carrying out the Heiser recommendations, difficulties arose in securing buildings that might be adapted for health center purposes in the city of Halifax and town of Dartmouth. Through the good offices of the Department of Naval Affairs, old Admiralty House, a commodious stone structure with large lawns and a garden, erected originally by the British Navy in the early eighteen hundreds for the purpose of residence and of entertainment of the admiral when the imperial fleet was in Halifax Harbor, was secured for health center purposes. The building had been renovated and freshly equipped for use during the war as a naval hospital, and lent itself splendidly to the community's needs. It was one of the few buildings to escape destruction in the devastated area. Admiralty House was made Health Center No. 1. In it were organized, as rapidly as a staff could be secured, prenatal, child welfare, preschool age and school age advisory and operative ear, nose and throat services; preschool age dental clinics, nutrition and posture classes, advisory and diagnostic tuberculosis services, a special psychopathic clinic for the explosion victims, and, under the local provincial government, clinics for the treatment of venereal and skin diseases.

Each of these services is covered by public-health nurses for the purpose of getting in touch with families and making instructive visits to the homes of those patronizing the clinics.

In Health Center No. 1, rooms are set aside for class teaching along hygienic and sanitary educational lines, and a certain amount of miscellaneous community education is undertaken as well. With the coöperation of St. John's Ambulance, first aid classes are conducted in the center, finishing with special lessons on personal hygiene. Boy scouts and girl scouts are brought to the center for instruction along the same lines, and numbers of young people are brought in groups from churches and factories in

A GLIMPSE OF DR. ROYER'S WORK AT HALIFAX

A few nose and throat cases already operated upon



Below.—An interesting view of the baby clinic, Halifax

At the nose and throat clinic

Left.—Part of the staff at the Dartmouth Health Center

Below.—Entrance to Admiralty House Grounds

the vicinity, to the teaching rooms, for health talks, lantern lectures, public-health moving pictures, etc., given by the public-health nurses and various members of the staff.

The splendid garden on the grounds is used by families found by the public-health nurses living in lofts or slum lodgings where no ground is available. The families (thirty) are encouraged and taught to cultivate and grow vegetables suited to the particular family needs, thus acquiring health, education and a desire for a home with a garden. A day camp for undernourished children is conducted on the grounds during the summer by the Anti-Tuberculosis League.

Plans are now being made for organizing classes in cookery in the health center for young women in the neighborhood, who often marry without sufficient training in supplying a family with food necessities and without knowledge of budgeting.

As soon as this first health center was fairly well organized, a second building was secured for health center purposes in the town of Dartmouth. In this instance, the building had been outgrown as a government postoffice. Centrally located, with electric lights and hot-water heat, when renovated it was almost ideal for a health center in a town of eight thousand. Here, tuberculosis, child welfare, eye, ear, nose and throat clinics and nutrition classes are organized, and the same sort of community teaching, with the exception of gardening, is being carried on in well-appointed rooms. Here the Victorian Order of Nurses, the I. O. D. E., the King's Daughters, and the G. W. V. A. meet and coöperate with the staff.

In the beginning of this work, the call elsewhere was so great that it was almost impossible to secure suitably trained public-health nurses. The Commission's executive officer, who, fortunately, had been called in consultation by the Red Cross Society of the Province, advised the Society to join the Commission's forces and Dalhousie University for the purpose of organizing a course in public-health nursing to train the nurses who are essential to public-health teaching in any community. These organizations agreed and were joined by the Halifax Welfare Bureau, the Victorian Order of Nurses and various charitable and philanthropic societies. By September, 1920, a class of nurses who had completed a six months' course and who were suitably trained for home teaching and health center work was available to the community.

The educational publicity and general educational work are directed from the central offices by the executive officer. Newspaper interviews, pamphlet publications, illustrated lectures and talks before clubs, churches and women's organizations of every sort and kind have been resorted to. Some "outfield" work, having a more or less direct influence on the local educational campaign, is conducted by accepting invitations to lecture at various points in the Province, always giving opportunity for reports to reach the local community through the press. The Commission's staff coöperated with the Red Cross in promoting the health caravans last year, helped with the publicity and speaking, and helped plan their triumphal return.

In May, 1920, a trained public-health nurse with years of experience in organization work, was engaged to assist the executive officer and to direct the nursing end of the work.

A full-time tuberculosis expert was secured in June, 1920, to work along plans very much like those at Framingham, i. e., he was to have general charge of all tuberculosis clinics and to serve as consultant to the community.

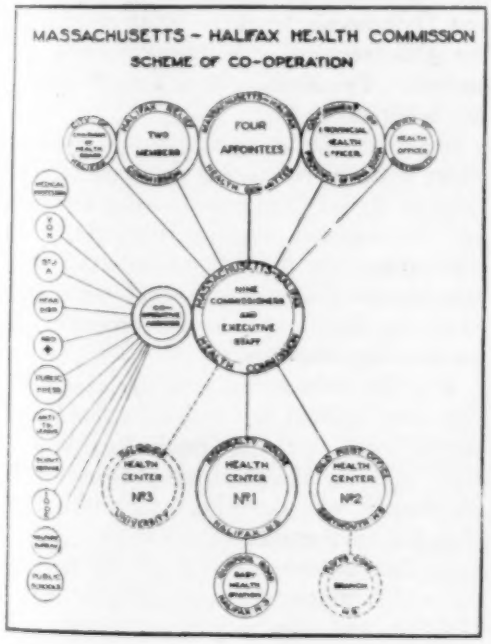
A series of advisory clinics were organized in the health center during the summer and autumn of 1920. The doctors were appointed to serve without salary, each, however, to be given research study allowance at the end of any twelve month period.

In order that physicians of the com-

munity might be given greater diagnostic laboratory advantages, and that the various health center clinics might have the advantage of scientific investigation and check, permission was obtained from the provincial government to place a full-time pathologist-bacteriologist with technician in the provincial laboratory. These places were filled in June, 1921, and the scientific services are being greatly appreciated by physicians and by the public.

With the opening of the various clinics and publication of monthly reports, the work of the Commission began to be more and more appreciated by the community. Within seventeen months of the opening of the first of these clinics in Health Center No. 1, more than one thousand families came under the supervision of this health center for medical advice, and half as many more came under nursing supervision in the district. A proportionately large number of families came under the supervision of the second health center, after its opening in March, 1921.

At the present time 2,000 families are under the medical and nursing supervision of the two health centers. Fourteen physicians and one dentist of Halifax and Dartmouth are associated with the Commission's various health center services, a chief nurse, twelve public-health nurses and one visiting housekeeper are employed. Two special nurses and two secretaries are also employed.



The work of the first health center, when reviewed by representatives of the International Health Board of the Rockefeller Foundation, influenced them to "earmark" $200,000 for building a Dalhousie health center for the south end of Halifax. This new health center is being planned for the University as an integral teaching unit of the medical school, and will serve as an out-patient department to the group of hospitals now growing up in the immediate vicinity of the medical school. With health center service for the southern half of Halifax conducted by the medical faculty from a University building, staffed with public-health nurses, students of medicine will be given great clinical opportunities and will here for the first time be given ample opportunity to study domiciliary causes of diseases, and a chance to acquire a better fundamental ground work for preventive medicine.

The general scheme of organization and the general plan of operation can perhaps be set forth best diagramatically. It would be described about as follows:

The Commission consists of nine men, three of them being members by virtue of their offices: the provincial health officer, the chairman of the Halifax City Health Board, and the health officer of the town of Dartmouth. Two are appointed by the Halifax Relief Commission, and four by the Massachusetts-Halifax Relief Committee of Boston. The Commission acts under a special provincial law and meets semi-monthly. Policies are determined by the Commission and work directed through the executive officer and staff. The provincial and local health authorities are members of the Commission for

the purpose of coördinating the established work of each with the new work undertaken by the Commission. It is the aim and object of the Commission to do such lines of health work as should properly come under the local health officials in each community, and to work in the closest coöperation with all privately endowed philanthropic and charitable agencies, so that a minimum amount of overlapping will occur and waste will be avoided.

The public-health nursing program is wholly constructive in character and is a very large feature of the work. Each nurse is responsible for the entire public-health program in the district assigned her and for the health of every member of each family with whom she comes in contact. She seeks to remove as far as possible domiciliary causes of disease, and to train and reëducate the family in right methods of living. In emergency only, or for family demonstration, is bedside nursing done. (The Victorian Order of Nurses does the routine bedside work in homes and gives general family instruction during such intervals.)

The health nurse's work is supplemented by instruction in the home given by a visiting housekeeper where families coöperate and nutrition problems are paramount.

The public water supplies require only the protection of sheds and germicidal treatment of water. This is wholly the work of the established health authorities and engineers. Some means of protection of water sheds have been provided for in both communities by posting warning notices, and in Dartmouth by fencing also. Halifax is treating the water supply with chlorinated lime. Dartmouth will be obliged to do so. The Commission's laboratory staff studies samples of water frequently for the purpose of watching bacterial content, reporting all findings to local health officials.

The milk supply is not well-handled. In Halifax a start has been made by employing a full-time veterinary inspector and by promulgating regulations covering farm production, shipping and retailing. Dartmouth has done nothing as yet. Both communities are remote from production and draw their supplies to a very large extent from poorly equipped dairies. Further, because of slow railway and retail deliveries, these milk problems are comparable to those of large cities.

Pasteurization will have to come for safety. Efforts are being made to create a public opinion that will demand pasteurization. Unfortunately, a good deal of backward education has to be overcome. Notwithstanding the fact that thirty per cent of the milk and ninety per cent of the cream in Halifax is now being pasteurized, a number of physicians and one scientific worker until recently opposed pasteurization. It may require another year to overcome this influence.

Halifax has recently opened a fifty bed tuberculosis hospital where advanced patients will be admitted for special care, the Commission's expert, laboratory staff and Dalhousie's teachers being available for this service. A preventorium is needed. Preparatory educational steps are being taken.

Improvement in sanitation is coming about with the rebuilding program of the Halifax Relief Commission—the Dominion Government organization which is represented on the Massachusetts-Halifax Health Commission—and with the street building and sidewalk program of the two communities.

It is the ultimate hope of the Commission that toward the end of a five year period such striking public-health results will be shown that Halifax and Dartmouth will be eager and willing to plan for furtherance of the work. They hope that before the end of the period for which money is now available, both Halifax and Dartmouth will begin to

finance the work more liberally and will plan to take over every activity proved to be valuable in lessening sick rates and saving lives. It is hoped that the death-rates obtaining when the work was begun, an average general death-rate of above 20 per 1,000, and an infant rate above 180 per 1,000 for a period of ten years for Halifax, will be dropped to 13.5 and 100, respectively, by the end of the first quinquennial period, and in Dartmouth to 13 and 100, respectively, in the same time. It will be the aim of the Commission to make public-health education, the prevention of disease and saving of life give sufficient impetus to preventive medicine in these communities that abundant funds will be readily forthcoming for continuing the work in the future, and also to set a splendid public-health example on the northeastern part of the American continent.

INNOVATIONS IN NEW YORK'S HEALTH AGENCIES

New Health Bureau. — Three Jewish health agencies, the Jewish Consumptives' Relief Society, the Jewish Board of Sanitary Control, and the Social Service Department of the Free Synagogue, have recently united in the support of a health bureau which will give to poor Jews free information and advice about physicians and hospitals. Although the health bureau will be chiefly devoted to giving personal information, it will also arrange lectures, and publish in Yiddish, literature on hygiene. — *Better Times*, January, 1922.

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Bureau of Children's Guidance. — The Commonwealth Fund has undertaken to finance for a period of five years a broad and comprehensive experiment in methods of preventing delinquency. In organizing the program it has seemed wise to concentrate effort on one or more particular sections of the field where definite results can be obtained which will assist the coördination and systematizing of child welfare work as a whole.

The program is built around three agencies: the National Committee for Mental Hygiene, the New York School of Social Work and the Public Education Association of New York. The appropriation made by the Commonwealth Fund provides for a children's clinic, known as the Bureau of Children's Guidance, to be a part of and under the direction of the New York School of Social Work.

The new Bureau is located at 9 West 48th street and is under the direction of Dr. Bernard Glueck.

Children presenting behavior problems from at least five of the public schools of the city will be given a thorough psychiatric examination at the clinic. The number of children handled will be limited to those who can be effectively treated with the facilities available. The clinic will provide knowledge through a scientific diagnosis, and will place special emphasis upon subsequent treatment, coöperating with the visiting teachers provided by the Public Education Association, with the general school staff and other available agencies.

The complete work of the clinic will be available for the field work of the students of the New York School of Social Work. Not only will there be resulting benefits to the children concerned, but the experiment will surely point the way to the development of similar work in other communities. The Bureau plans primarily to limit its efforts to the study of behavior problems as found in individuals of school age, including the adolescent group, and it is hoped that in the five-year period provided for there will grow a better understanding of the possibilities of dealing with behavior problems before they become seriously crystallized.

The Fund provides for a number of scholarships to the New York School of Social Work for properly qualified students.

IMPORT DISEASES AS THEY AFFECT THE WORK OF THE NEW YORK CITY HEALTH DEPARTMENT

ROYAL S. COPELAND, M.D.
Commissioner of Health, New York City

Read before the Public Health Administration Section of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 16, 1921.

HUNDREDS of thousands of immigrants enter this city from various infected ports in which such diseases as smallpox, typhus, cholera and plague may be epidemic or endemic. The detection of disease in these immigrants is dependent first, upon the ability and interest of the ship's doctor; second, upon the adequacy of the staff of medical inspectors assigned to quarantine.

While the usual checks operate fairly effectively in ordinary times, there is always a danger of cases slipping through without being detected because of hurry, incompetence, difficulty of making a diagnosis, or failure from any cause to observe suspicious symptoms. This danger is greatly magnified when epidemics exist in foreign countries, and particularly when the volume of travel is great.

For these reasons, until immigration and quarantine methods are improved, it is essential, in the interest of the millions in the various communities throughout the country who may receive immigrant settlers coming through this port, that we should have an additional safeguard and not depend on the single filter established by the medical inspection service of the federal government.

Last spring the New York City Health Department established its own quarantine and examined every person entering the city. Now, as a result of that examination, we have found thousands of immigrants coming from countries where typhus fever was endemic or epidemic who were infested with lice brought to this country from abroad. We have found trachoma in many immigrant children in the public schools and, no doubt, if a factory survey were made, we would find this disease among immigrant industrial workers.

There is not a clinic in the city that has not had to treat venereal diseases in recently arrived immigrants. The crews of many of these vessels are infected with venereal diseases, and their presence in our community for varying periods of time constitutes a grave public-health menace.

We have eight thousand merchant sailors in New York every day, and it is estimated that at least six thousand of them have the worst type of venereal disease.

The quarantine officers allow first cabin passengers and usually the second cabin passengers coming from abroad to enter with very little or no medical inspection, as if the possession of money to buy better accommodations were a guarantee against various infections.

Examinations have shown that the vessels, especially the wooden vessels, coming from ports where typhus fever in particular was prevalent, had myriads of lice and sometimes other live carriers of disease in the ballast, and not infrequently in the food and other cargo brought over. In vessels coming from plague-infected countries, not infrequently rats were found, and our city ordinances and measures must provide methods of protection against these rodent carriers of disease, or we stand in great danger of the development of plague.

The New York City Health Department was called on several years ago, when cholera was prevalent in certain European countries, to assist quarantine in examinations for the detection, not

only of cholera suspects but of healthy carriers as well and many were found. Who can say how many cholera carriers there are among immigrants who have been admitted through this port, who may take up food handling in various parts of the country, or who may spread the disease by unclean habits in their homes?

There is practically no quarantine safeguard that New York and other seaport cities possess against coastwise travel and trade. Little more than a year ago a fishing vessel which coasted down from Canada to Long Island had more than a score of cases of smallpox develop among its crew. Of these cases, two came into New York, and one or more were found in certain localities in New Jersey.

Moreover, after cases have passed quarantine inspection, they are frequently herded in insanitary conditions at Ellis Island, where the possibilities for the development and spread of disease are many, and these cases may enter the city of New York and spread to various communities throughout the country, carrying disease with them.

I made the statement last spring that if I had my way I would declare Ellis Island an infected port, and I would not let anyone come to New York from that port.

These various facts show that New York City, in common with other ports of entry for hundreds of thousands of immigrants annually, must be more adequately protected, and that the New York City Department of Health has a definite function and responsibility. Obviously, unless the Federal Government devises better methods, the time is here for cities like New York, owing to rapid growth and to the thousands of immigrant additions to its population, to have a method of control and follow-up of newly arrived immigrants. In this way we may locate disease which has escaped discovery at quarantine. It is our duty to inculcate hygienic habits and protect the sanitary surroundings of such individuals, so that they may not through faulty habits or through overcrowding spread disease. This undertaking should reach not only to the home, but it should be conducted especially to see that immigrant children do not introduce disease dangers into our schools and that the industrial population is protected against immigrant disease.

We must not overlook the fact that while many of our immigrants are splendid additions to our national resources, many of them come from benighted countries. They labor under ignorance, or have, as a result of poverty together with ignorance, acquired social and community habits which are a distinct menace.

We have no way of determining at the present time whether the tuberculosis situation in this country has been intensified by the addition to our population of immigrant tuberculous persons who may be the sources that feed the flames.

I spoke one night last spring down in East Broadway in the heart of the Ghetto, in the Educational Alliance. There were about one thousand present in the audience, and it seemed to me as I looked at them that half of them must have just landed here. I was interested to know what the health of their children might be, and the next day I sent an inspector to the schoolhouse, and in one school room he found eleven children infected with tuberculosis, nine of whom had just landed here.

What I have said is not intended to reflect upon the officials of the U. S. Public Health Service. Like Sisyphus, they are attempting to push a stone uphill. Without sufficient strength in the way of appropriation, they are helpless.

Until Congress recognizes the absolute necessity of spending money to protect the nation, the menace of disease from abroad will ever threaten New York City and the country at large. There is frank prejudice in Congress against the expenditure of money for the protection of

the public health. This comes either from ignorance, or from the failure of health officials in the United States to impress our national legislators with the necessity of action.

It is time that the American Public Health Association arose in its might and demanded of Congress a fuller recognition of what the country needs in the way of health protection.

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FUNCTIONS OF THE PUBLIC HEALTH LABORATORY IN CONTROLLING THE IMPORT DISEASES

WILLIAM H. PARK, M.D.
Director of Laboratories, New York City Health Department

Read before the Public Health Administration Section of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 15, 1921.

THE functions of a public-health laboratory in controlling the import diseases are chiefly diagnostic. They are in many respects similar to those of any public-health laboratory, but differ in others.

The usual laboratory is not faced with the necessity of preventing the dissemination of diseases which are not endemic in a country. If a stool from a suspected case of typhoid fever or a culture from a suspicious throat is improperly handled, and a negative report is wrongly given and preventive measures therefore omitted, a few cases of typhoid fever or diphtheria may be added to the number which would have otherwise occurred in the community, but no new kind of infection is spread. The public has no knowledge of the error and therefore no excitement is created and no blame results. If, however, cholera should be imported because the laboratory failed to isolate the vibrios in the stools of a case or a carrier, a spirillum which did not otherwise occur in this country would gain entrance, and, although under present conditions it is almost inconceivable that such infection should become widespread, there would still be sufficient possibility of this accident to arouse the public-health authorities to take drastic measures to absolutely stamp out this invading infection. The importance of protecting the country from external diseases requires, therefore, that the quarantine laboratory should be excellently manned and equipped.

In another matter the quarantine laboratory, acting as a preventive of import infection, differs from the home laboratory. Quarantine service touches great personal and great financial interests. This is especially the case if the laboratory is dealing with overseas vessels. If a case of suspected smallpox occurred in a home or even in an apartment building or lodging house, it would not mean any great inconvenience to many people if the suspected case and all in contact were kept isolated until in a leisurely manner a very careful investigation was finished.

The conditions are very different when an ocean liner, with from 1,000 to 2,000 passengers, or a great cargo, is waiting to have it decided whether or not a passenger or sailor has typhus fever, bubonic plague or cholera. If an undetected case of any one of these diseases is passed into the country, the health authorities are put to expense and great public excitement is created; while, if a vessel is unnecessarily detained, thousands of passengers are greatly inconvenienced, the steamship companies have their expenses greatly increased and commerce is seriously affected. It is clearly evident that technical skill and good judgment of the highest order are necessary among those who must decide in any given case how far public safety requires the holding up of commerce.

The diagnostic laboratory should in the first place have on hand everything necessary for quickly and efficiently carrying on the necessary diagnostic procedures, such as an adequate supply of slides, swabs, tubes, specific agglutinating sera and media for carrying out the work. A trained force with suitable supplies can quickly obtain accurate results and make a reliable report. Before considering very briefly the value of the laboratory in detecting some of the import diseases, I should like to say a word about the nature of the laboratory force.

I believe that not only should the laboratory have trained technicians but, at least in large quarantine stations, that one of the laboratory force should have some medical training and be competent to make inspections with the medical officers and help decide what cases are suitable for laboratory help. For instance, it might well happen that the clinical physicians would not appreciate the value of a Felix Weil test in a slightly suspicious or convalescent case of typhus fever, while the laboratory representative trained both in medicine and in laboratory technic, would avail himself of opportunities which might be overlooked by the specialized clinical staff.

What degree of protection should we demand from the importation of diseases?

Although it is true that most people expect the quarantine station to absolutely prevent the passage of an infected person into a country, it must be remembered that they also expect quarantine procedures not to unnecessarily block traffic or interfere with the freedom of the passengers.

I think that we will all agree that if an active case of typhus fever, cholera or bubonic plague passed quarantine inspection it would cause more perturbation than real danger. We know so well the methods by which these diseases are transmitted and controlled, that it would be belittling our own power to control the spread of these diseases if we really feared that the introduction of a few cases of any one of these diseases would really start an epidemic in the United States or Canada. We are justified, however, in guarding the gates at quarantine so thoroughly that no alarm of the uninformed public and no expense to local health authorities unnecessarily results.

The point I wanted to make is that if every few years an undeveloped case of typhus fever, cholera or plague or disease carrier passes the barriers, it may be through no fault of the quarantine station or laboratory. It may be simply due to the fact that in order to facilitate proper traffic among the nations, slight chances are knowingly taken. The English health authorities have for years operated their quarantine on this basis.

The quarantine laboratory may be not only an aid in excluding the import diseases mentioned, but also an aid in excluding persons who, though no more a menace than many of our citizens, are not desirable as newcomers. The laboratory might be asked to make examinations for leprosy, tuberculosis and the venereal diseases. Research could also be properly undertaken in those diseases in which laboratory assistance is desirable.

The three important diseases in which the laboratory is of use are typhus fever, cholera and bubonic plague. It is of value also in relapsing fever, leprosy, and venereal diseases.

Typhus fever: Between the third and fifth day the blood of up to 50 per cent of typhus fever patients will agglutinate in fairly high dilutions the proteus bacillus isolated by Felix and Weil. During the next few days the great majority of the remainder will react. Few, if any diseases other than typhus fever give this reaction.

At the Rosebank Quarantine Laboratory, Mr. Holt Harris has obtained the reaction in all of 70 cases believed to be typhus, and in none of a much larger

number who were healthy or were suffering from other diseases. A preliminary slide agglutination can be done on the vessel or a report issued within two hours if the blood is sent to the laboratory. Although the test is nonspecific, it is of extreme value. Suspicious convalescent cases can be tested in the same way and information thus gained may be very helpful.

Cholera: Cases not having diarrhea are given a dose of salts. After the salts have operated a sterile swab is passed into the rectum and withdrawn. It is dropped into a tube of peptone solution. When all the crew and suspected passengers have been cultured, the tubes are incubated for eight hours. A loopful of the surface growth is inoculated into a second tube of peptone solution and these are examined after eight hours. When abundant spirilla are found on the surface of the peptone solution, these are tested with a highly specific anticholera serum. These tests can be completed in from twenty-four to thirty-six hours and are almost certain to detect carriers and cases. Plate cultures, isolation of the spirilla, and agglutination tests may be used for verification.

Bubonic plague: Some bubo material, blood or sputum, is cultured on nutrient agar, some is planted in broth and some is rubbed on the shaved skin of a guinea pig. Other material is spread on slides, stained and examined. After twenty-four or thirty-six hours the cultures are examined. If after investigation the cultures are still suspicious, they are fished and examined. If colonies are suspicious they are inoculated in guinea pigs and rubbed on the hair free skin. The results are known in about forty-eight hours and are very reliable.

Leprosy: When a person is suspected of leprosy a bacterial examination of bits of skin from the suspected area will frequently give a positive result. The absence of acid-fast bacilli is not absolute proof that the case is not leprosy.

Relapsing fever: Blood examinations can be made in doubtful cases and those identified as relapsing fever isolated at quarantine or sent to a city hospital.

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Meeting of American Association for the Advancement of Science.—The second Toronto meeting of the American Association for the Advancement of Science and of the associated scientific societies was held during the last week of 1921. Dr. L. O. Howard, chief of the Bureau of Entomology of the United States Department of Agriculture, the retiring president of the Association, delivered an address at the opening meeting on "The War Against the Insects." Dr. J. Playfair McMurrich was elected president of the Association for 1922.

The Section of Medical Sciences of which Dr. A. J. Goldfarb, of the College of the City of New York, is secretary, presented a symposium on "The Health and Development of the Child." The following program was announced:

Vice-presidential address, The Past and the Future of the Medical Sciences in the United States—Professor Joseph Erlanger, professor of physiology, Washington University.

Hereditary Factors in Development—Dr. Charles B. Davenport, director of the Laboratories for Experimental Evolution of the Carnegie Institution.

The Metabolism of Children in Health and Disease—Professor Harold Bailey, Cornell Medical School, New York.

Newer Aspects in Dietetics of Children—Dr. Alfred Hess, College of Physicians and Surgeons, New York.

Movie Exhibition of Tonsil-Adenoid Clinics in Operation—Dr. George W. Goler, health officer, Rochester, N. Y.

The Mental Hygiene of Children—Dr. C. M. Hincks, associate medical director, Canadian National Committee for Municipal Hygiene, Toronto, Canada.

REPORT OF THE COMMITTEE ON SCHOOL HEALTH PROGRAM

Read before the Provisional Child Hygiene Group of the American Public Health Association at the Fiftieth Annual Meeting, New York City, November 15, 1921, and adopted by a vote of those present.

THE present post-war and nation-wide interest in child health, and the increased and broadened activities of both official and unofficial agencies in this field indicate that the time is opportune for the adoption of a comprehensive school health program. The health promotion value of such a program is unquestioned, and the responsibility for its establishment rests in no small measure upon the public-health profession.

In some communities the initial stimulus for the improvement of health conditions in the public schools has come from the health authorities, and in other cases from the department of education. Because of these variations, and because of the varied history, interest, and duties of the two departments in different cities, it is not possible to make any statement regarding what the distribution of activities should be.

It is quite obvious, however, that the government, which requires the compulsory attendance of children in the public schools, accepts the responsibility to maintain and improve the health of school children by every practicable and feasible means. The health department, which has the responsibility for the promotion of community health, and the school department, which has the responsibility for the education of the child, must coöperate if this work is to be permanent and cumulative in its effect. In the last analysis, local conditions must always determine the nature of this coöperation.

The earlier developments in this field included improvement in the machinery for controlling communicable diseases among school children, and a better organization of the effort to correct bodily defects which were found to exist. There is no doubt in the mind of the health officer as to the importance of either one of these tasks. The first he regards as the fundamental function of any health agency, and, with statistics from the draft and from physical examination of school children at hand, he realizes most keenly what the early correction of defects would mean to the health of the whole population.

But this work should not stop with the prevention of disease and the correction of physical defects. To be most effective it must go further, and give to the child by training and instruction a correct set of health habits, a properly functioning body, and an understanding of the hygienic conduct of life. Your Committee, therefore, believes that the minimum essentials of a good school health program include: health protection, correction of physical defects, and health promotion.

The Committee on School Health Program was appointed by the president of the Association early in the current year, and in view of the fact that school health work is now in its developmental stage, it has not seemed wise to report upon the details of administrative procedure at this meeting. The Committee, however, recognizes that, in spite of the variation in professional opinion and in local conditions, a report upon these details might be of definite value, and it recommends that the Association appoint a committee on health problems in education which shall further address itself to this problem, and which shall be given power to affiliate itself with the Joint Committee of the National Education Association and the American Medical Association.

The present report sets forth the fundamental activities and requirements of the School Health Program, grouping them in the following fashion:

I. Health protection.
  a. Sanitation of the school plant.
  b. Examination.
    1. Physical.
    2. Psychological.
  c. Communicable disease control.
II. Correction of defects.
  a. Special classes.
  b. Clinics.
  c. Follow-up.
III. Health promotion.
  a. Hygienic arrangement of the daily program.
  b. Physical activities.
  c. Health instruction and motivation for teacher, pupils, and parents.

I. HEALTH PROTECTION

a. Sanitation of the school plant. In this matter the Committee accepts the principles laid down in the Report on Minimum Health Requirements for Rural Schools of the Joint Committee on Health Problems in Education.

Although its construction is not always possible, the one story school building is the ideal in new construction where practicable. School buildings should be so designed as to permit the adoption of open window conditions for all classes, irrespective of the physical condition of the pupils.

b. Examination.

1. Physical examination. The Committee approves of the general principles set forth in the Report on Health Essentials for Rural School Children prepared by the Joint Committee on Health Problems in Education.

There should be a complete physical examination of all pupils by a physician at least once a year for detection of correctible defects.

In so far as possible, school physicians should be employed on a full-time, instead of on a part-time basis.

A rapid survey of children should be made at the beginning of the school year and after each extended intermission, for the purpose of excluding all sick children.

2. Psychological examination. The Committee is opposed to the indiscriminate use of the usual mental tests by school teachers, school principals, medical inspectors, and nurses, who have not had special training and experience. The application of psychological tests should be entrusted only to trained psychologists or psychiatrists. Examination by a psychiatrist is desired for all children found by these tests to be abnormal.

c. Control of communicable diseases. The Committee adopts, in so far as it relates to the control of communicable disease in schools, the report of the Committee on Model Health Legislation of the A. P. H. A. called "The Model Health Code for Cities." (Published, March, 1921, by the A. P. H. A.)

Daily inspection, by a well-trained nurse, of all classes to which she is assigned, and the prompt exclusion of all children suspected of having communicable disease is the *sine qua non* of efficient control.

II. CORRECTION OF DEFECTS

a. Special health classes. The necessity of thorough health instruction for all children is set forth in Section III. It is the furtther duy of the school system to supply special classes for those children whose health does not enable them to stand the regular work of the school session. The term "special health class," as here used, refers to class room instruction provided under special conditions for groups of children selected on the basis of some defect. The definition does not include occasional group meetnigs of children for special instruction.

a. Special classes.

1. Open air classes are advocated for physically debilitated children of the anaemic, glandular, and undersized type, and for children with heart lesions showing broken compensation, whose disease does not in the physician's judgment prevent school attendance.

Small buildings on open lots are most desirable. Temperature is maintained at approximately 55° F. Kitchen facilities and mid-morning lunches should be available. Equipment should include movable

furniture, resting chairs and blankets or sleeping bags. Twenty-four pupils of two grades, or thirty pupils of one grade, is the maximum class number. A specially arranged program with physical examination upon entrance, weekly visits by the school physician, daily visits and follow-up work by the school nurse, should be provided for these children.

2. Sight conservation classes are advocated for children of one-third to one-tenth normal vision. They teach the conservation of sight, class room subjects and hand work. The room must have good light, preferably a north or northeastern exposure. Glare must be eliminated. Equipment should include movable and adjustable desks, unglazed paper, soft black pencils, readers with large print (24 point) on yellow tinted, unglazed paper. Study is alternated with periods of manual work or exercise.

(Special classes for the mentally deficient, blind and deaf are not included here because their primary requisite is not health conservation or improvement.)

b. Clinics. The term clinic as here used refers to a place where examination and treatment of some sort are given under medical or dental supervision, with or without advice in methods of health improvement. It is urged that in the interest of economy, public clinics, either municipal or private, shall be used for school children wherever possible.

1. Dental clinics. Every child requiring dental work should, as far as possible, be sent to a private dentist. Parents should be urged to secure treatment. Only children whose home conditions warrant it should be sent to a clinic. Dental clinics in the neighborhood of schools should be advocated.

2. Eye clinics. Clinical facilities for the treatment of eye cases are recommended upon the same basis as clinics for dental treatment.

3. Nutrition clinics. Proper food habits should be taught in the general class room and to special groups, but nutrition clinics under medical direction are recommended for children who are in such condition as to require medical care, with special attention to nutrition, and who cannot receive the attention of a private physician.

4. Posture clinics. The teaching of correct posture to all children should be supplemented by posture clinics for children who are suffering from scoliosis or other defects requiring the medical or hospital type of treatment in correction, and who are not able to have the attention of a private physician.

5. Heart clinics. In the treatment of children with heart defects, functional and organic defects should be separately diagnosed, and children with organic defects should be placed under hospital or private medical treatment.

6. Tonsil clinics. Clinical facilities for the treatment of tonsils and adenoids are recommended on the same basis and principles as employed for the treatment of other physical defects.

7. Tuberculosis. Positively diagnosed cases of tuberculosis should be given treatment and instruction elsewhere than in the public schools.

c. Follow-up. The utilization of public-health nurses is an accepted principle in public-health procedure. Follow-up work endeavors to secure the coöperation of the family, in having the children cared for by the family physician or dentist. If circumstances do not permit this, nurses should assist in securing medical aid from the public clinic. They should, however, accompany the children to clinics only upon the written request of parents.

III. HEALTH PROMOTION

Health promotion activities require (1) such an arrangement of the daily program as to keep fatigue at a minimum, (2) physical activities to relieve necessary fatigue and build strong, properly functioning bodies and minds, (3) such instruction to teachers, pupils, and

parents as will secure the formation of proper health habits for the individual, school, home, and community.

a. Hygienic Arrangement of the Daily Program. There should be such an arrangement of the daily program as to secure the most favorable conditions for activity, by a suitable alternation of study with work and play, of the use of the large with that of the small muscles, of activity with rest periods, of indoor with outdoor activities. Short relaxation periods between classes are indicated when the exigencies of the school program prevent the suitable alternation mentioned above.

Hot school lunches should be available for all pupils who are unable to get home regularly during the noon intermission. It is equally necessary that the child should have a suitable breakfast before coming to school.

The number of hours per day which shall be required of the child in a properly regulated school program should be graded according to the age, and the mental and physical resistance of the child.

The basis for admission and promotion should be the physical and psychological condition of the child rather than the chronological age alone.

b. Physical Activities. At least 180 minutes per week should be available for vigorous physical exercise. The type of exercise should call into play vigorously the large fundamental groups of the big muscles. These exercises should be supplemented by others to bring into play the finer muscles of coördination. Games should be so conducted as to develop alertness, cheerfulness, and fairness. Special attention should be given to the development of habits of good posture. School credit should be given for physical activities.

c. Health Instruction and Motivation. The goals of health instruction are to establish health habits, to give the child a practical knowledge of the principles of healthful living, to develop health ideals, and to arouse a sense of individual responsibility for the health of the community, and community responsibility for the health of the individual.

A sanitary school environment and a proper attitude on the part of the teacher are constant features in developing suitable health attitudes on the part of the child.

The content of health instruction must vary with the age and grade. In the kindergarten and lower four grades, the chief effort should be to develop health habits mainly by inspections and special devices.

In subsequent grades systematic instruction should attempt to crystallize and fix the health habits which have been taught heretofore, and to provide the pupil with necessary information concerning the physiological basis for healthful living, the principles of bacteriological cleanliness, and the sanitation of the community. The teaching of first aid and simple facts about home nursing should be included in the instruction program. The care of the teeth should be taught by instruction and by toothbrush drills. The importance of mental hygiene should not be forgotten.

The work of each grade should be so planned that the necessary repetition of facts will not be dull, and that new material shall be presented in each grade. The positive conception of health, rather than the negative conception of disease, should always be emphasized when possible.

Satisfactory results are impossible unless interest and enthusiasm are maintained. The use of special devices and activities is necessary to achieve that end. These include such things as health inspections, experiments, illustrations, dramatization, songs, the making of scrap books, contests, child organizations, and the keeping of health habit score cards.

The mental and physical health and health habits of the teacher are important factors not only in determining individual efficiency, but also in the progress of the pupils, and every effort should be made to maintain the highest possible health standard throughout the teaching force.

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FIVE YEAR COMPARISON OF VITAL STATISTICS, STATE OF INDIANA*

	1921		1920		1919		1918		1917	
	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate
BIRTHS (stillbirths excluded)	67,850	23.2	64,809	22.1	59,273	20.1	64,313	22.1	63,073	21.8
DEATHS (stillbirths excluded)	35,134	12.0	39,430	13.4	37,077	12.5	46,361	15.9	39,785	13.7
Infant deaths under 1 year of age	4,860	...	5,296	...	4,690	...	5,685	...	5,327	...
Infant mortality rate per 1,000 births	....	71.6	....	81.4	....	79.1	....	88.4	....	84.4
TOTAL DEATHS WITH RATE PER 100,000 POPULATION FROM FOLLOWING DISEASES										
Tuberculosis (all forms)	2,712	92.7	3,151	107.7	3,268	110.8	3,969	136.3	3,980	137.4
Typhoid fever	360	12.3	282	9.6	338	11.5	398	13.7	497	17.1
Measles	71	2.4	286	9.8	70	2.4	120	4.1	550	19.0
Diphtheria-Croup	700	23.9	358	12.2	320	10.9	428	14.7	444	15.3
Scarlet fever	154	5.2	198	6.6	79	2.7	117	4.0	144	4.9
Whooping cough	348	11.2	261	8.9	64	2.2	469	16.1	251	8.6
Pneumonia (all forms)	2,347	80.2	4,150	141.6	3,348	113.5	5,640	193.7	3,714	128.4
Influenza	311	10.6	2,290	78.1	2,929	99.4	6,301	216.4	565	19.5
Diarrhea-enteritis (infants)	1,110	37.9	1,032	35.2	1,028	34.8	1,240	42.6	1,478	51.1
Puerperal septicemia	183	6.2	224	7.6	187	6.3	245	8.4	203	7.0
Cancer (all forms)	2,681	91.7	2,592	88.4	2,518	85.4	2,558	88.0	2,542	89.9
Smallpox	21	.7	15	.6	12	.4	24	.8	14	.5
Accidental causes	1,913	65.3	1,968	67.2	1,804	61.2	2,198	75.5	2,401	83.1
Homicidal deaths	186	6.4	135	4.6	130	4.4	109	3.7	194	6.7
Suicides	431	14.7	327	11.1	364	12.4	339	11.6	423	14.6

*Prepared by H. M. Wright, director, Division of Statistics, Indiana State Board of Health.

FATIGUE IN INDUSTRY

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Read before the Industrial Hygiene Section of the American Public Health Association, at the Fiftieth Annual Meeting, November 18, 1921, New York City

FATIGUE may arise in the central nervous system, the muscular system, or in both combined. It may be subjective, as experienced by the worker, or objective as noted in his actions and output. In industry fatigue arises chiefly in the central nervous system.[1]

Unfortunately, in most discussions of industrial fatigue, a falling work curve or diminished output among employees who have not reported ill is accepted as a complete, uncomplicated reflection of fatigue. This sweeping assumption is wholly unjustifiable.

From a thorough consideration of the literature it is quite evident that a vast amount of emphasis has been laid upon the mechanical or extrinsic factors influencing the working capacity, while the multiplicity of intrinsic original physical or mental states that may limit the working capacity have been almost wholly ignored.[2, 3-8, 9-15]

Emphasis has been laid on fatigue toxins, although it is doubtful whether any specific fatigue toxin exists, or whether metabolites in the blood resulting from muscular work can really cause fatigue in ordinary factory labor, except under conditions of unusually prolonged, severe or violent muscular work. In fact, skilled labor is much more liable to cause fatigue because of the demand it makes on the central nervous system.[16]

Bainbridge reviews the evidence and says:[17, 19]

> There appears, therefore, to be no secure foundation for the belief that products of muscular activity take any share in bringing about fatigue of the nervous system. * * * The conclusion that fatigue as observed among industrial workers is essentially of nervous origin is of considerable practical value.

After discussing various factors apart from work, such as fear, emotion, anxiety, worry, and the preventives of fatigue, financial gain, emulation and other stimulating influences, he mentions the general health as reacting on working power, but does not develop this phase of the question. He lists the following table from Vernon:

27 MEN SIZING FUSE BODIES (HEAVY LABOR)

Period	Average hours of work per week	Average (relative) output per hour	Average output per week
(1) 6 weeks	61.5	100	6150
(2) 6 weeks	51.1	109	5570
(3) 8 weeks	55.4	122	6759
(4) 3 weeks	56.2	123	6969

He comments as follows:

> The results shown in this table point to the conclusion that, at least in this particular occupation, the maximal working week, consistent with the avoidance of cumulative fatigue, is fifty-six hours. For lighter forms of work, Vernon found that longer hours could be worked without loss or even with improvement of output.

While in an immediate sense these conclusions are justified, the workers themselves must be studied as to all the factors, apart from work, that have influenced their output. We have little hesitation in saying that the most important factors relate to the original fundamental condition of physical and mental health of the workers before the work tests were applied. Cumulative fatigue is stressed by most writers, but the obvious influence of impaired health, in determining as cumulative fatigue what would otherwise be physiological and rhythmic, is ignored; that is, infection may so depress an individual as to prevent him from rallying from ordinary

physiological fatigue, and thus carry him over into cumulative fatigue.

Important studies have been made in this country comparing an eight-hour plant with a ten-hour plant, reported in *Public Health Bulletin No. 106.*[1]

It seems unfortunate, however, that this painstaking and critical scientific investigation should have been reported under such a caption. It is not actually a comparison of an eight-hour plant with a ten-hour plant, but a comparison of a highly organized, stable and unusually efficient automobile plant, in which the employees were very fortunately situated with regard to many factors other than an eight-hour day, with a metal-working establishment where the operations had not long been standardized—a plant described in the report as one of the "mushroom growths of war industries," where the workers were unfavorably situated with regard to many matters apart from the ten-hour day.

In order fully to appreciate the gaps that exist in fatigue studies with regard to the underlying factors of causation, an analysis of Florence's critical and otherwise comprehensive presentation of this subject from the conventional standpoint may be useful. Florence defines industrial fatigue as "a diminution of working capacity caused by length or intensity of some activity in 'a gainful occupation,'" and he rightly insists that in fatigue studies we must first show the fact of a definite diminution of working capacity, and second, associate the diminution "with the fact of a definite increase in the length or intensity of activity." This expresses a sound principle, but would be more correctly stated: "Associate the diminution with a certain *degree* or *duration* of activity," as fatigue might still exist under certain conditions even though hours be shortened and labor lightened.

If these principles were logically observed in fatigue investigations and in the interpretation of the evidence, the subject would not now be so obscured by the total neglect to evaluate the factors contributing to fatigue other than "intensity or duration of labor."

Florence lists a number of industrial conditions that are related to fatigue and its prevention. In this list no less than fifty-six important factors are noted, such as age, race, sex, habits, mental states and other personal items; but no mention is made of physical condition, presence or absence of such conditions as physical defects, infections, low blood pressure, endocrine imbalance, defective vision, defective hearing, constipation, poor nutrition and anemia.

In proceeding to discuss the fatigue question, Florence lists the following subjects and a chapter is devoted to each:

A. The output rate per given period of time.

B. The consumption of mechanical power at any given moment.

C. The rate of accidents per given period of time.

D. The proportion of spoiled work to output.

E. The proportion of sickness and unrest among the industrial population.

Under the subject of the proportion of sickness and unrest among the industrial population, the *British Health of Munition Workers' Committee Memorandum No. 10* is quoted: "An undue proportion of sickness in any group of workers usually represents, among those not actually sick, lessened vigor and activity"; and also: "Sir James Paget remarks that 'fatigue has a larger share in the promotion or permission of disease than any other single causal condition you can name.'"

The discussion is then carried along the line of considering sickness as the result rather than the cause of fatigue.

Lee's general attitude is the same, and he likewise quotes Sir James Paget.[2] No doubt fatigue can lower resistance to infection and produce ill health. But that existing states of

ill health are wholly due to working conditions, or even partly or in any sense due to working conditions, can only be determined by first excluding other factors of prime importance that relate to the physical state of the worker before the strain of working conditions was imposed.

Laboratory studies cannot be applied to human activities unless a due sense of proportion is observed. The amount of physical exertion represented in Abbott and Gildersleeve's experiment with rabbits, quoted by Lee,[2] must be shown to be equivalent to the muscular exertion and mental strain represented by a long working day, before its implication as to a lowering of resistance to infection in man equivalent to that exhibited by the rabbit is accepted. A more correct comparison would be that of a rabbit busily engaged in doing his normal work with a man likewise engaged. It is probable that few industrial workers of the present day are pushed to a length even approaching the extremes of physical exertion represented by the experiments in animals; all of which emphasizes the need for human observation under proper control and in proper selection of homogeneous groups for comparison — conditions almost wholly lacking in fatigue studies to date.

In the report of the British Health of Munition Workers' Committee,[8] fatigue is defined as "the sum of the results of activities which show themselves in diminished capacity for doing the work." This is a correct definition of simple, uncomplicated fatigue; but that it is unjustifiable to apply it without clarification to the phenomenon of falling output, or even subjective consciousness of fatigue, which the British worker aptly describes as a condition of being "fair-whacked," is a contention well supported by the Committee's own statement that "without health there is no energy, and without energy there is no output."

What, then, could be simpler or more rigorously demanded in a fatigue study than to ask: What was the original physical state of health of these people before they were tested as to their resistance, productivity and reaction to working conditions? The Committee frequently emphasized the importance of health and even of medical examination and the personal hygiene of the workers in special lines, but throughout the report and throughout the discussions and comments that have been based on these reports, we find fatigue presented as the great cause of ill health and no adequate emphasis on the long range of physical impairments, many of them arising in infancy, that must necessarily limit the working capacity.

If these defects were inevitable or irremediable, we should be under the necessity of ignoring them and considering the worker as he stands—imperfect. As statistics have shown that more than 50 per cent of the defects are preventable or curable, the implication is obvious as to the need for evaluating them according to their influence on so-called fatigue, and working to correct fatigue at its original source rather than by measures that compromise with sub-standard health.

The British Committee states that fatigue is measured by:[8]

1. Output.
2. Accidents and spoiled work.
3. Lost time and staleness (being "fair-whacked" or American "all in").

The remedies lie along the line of:

1. Observation of output.
2. Studies of sickness returns and lost time.
3. Adjusting hours and conditions to physiological needs.
4. Food, rest and recreation.

This obviously fails to include the fundamental measure we have stressed.

In contrast to the report of the Committee on the Health of Munition Workers, we have that of the British National Service Board[26] in charge of the physical examinations for the army. The unanimous opinion of the boards represented

by the Committee is to the effect that the low physical standards found were chiefly due to faulty rearing, to neglect of preventable physical deficiencies and not *per se* to working conditions, or even to poverty.

The physical conditions revealed by the British draft examinations are ample to account for lowered working capacity. But there is nothing in the facts revealed to justify the opinion that a mere shortening of the working day and lightening of labor will correct the original, underlying physical deficiencies. Many of these defective people would no doubt be immediately relieved and benefited by shorter working hours and lighter work, but the upbuilding of the health of the British nation requires much more than regulation of working hours or even improvement of working and social conditions. The individual must be better taught how to live and build up a strong body, free from defects, competent to do a full day's work, and holding something in reserve for emergencies.

Gilbreth,[21] presenting the mechanical viewpoint, states that in a fatigue survey the most important data are those which have to do with lighting, glare and reflection, alternate sitting and standing, dark-colored walls, types of chairs used, and similar influences. To such influences he ascribes a loss in productivity of 20 cents per worker for each and every working day. This would mean a loss of $60 per annum for each worker, or about $2,500,000 per annum for the entire working population. Further proof is required to support such figures; but if 50 per cent of such saving from the correction of mechanical environmental defects is possible, what value shall we attach to a critical physical examination that reveals more than 50 per cent of the working population with defective vision requiring correction?[24] How much fatigue can we prevent by such correction as compared to the relatively trivial influence of environmental factors?

We would say that in a survey of fatigue it is first necessary to inquire:

Does the output fall because the worker is tired, or because he is physically deficient?

Is the worker ill because he is tired, or tired because he is ill?

Inasmuch as physical examinations have shown that more than 50 per cent of any group of industrial workers are in need of medical attention,[25] this enormous factor which has been practically ignored in fatigue studies is entitled to first instead of last place. Comparisons of the productivity of six-, eight- and ten-hour plants do not give real testimony as to the optimal working day in any industry, unless we know how many in the group are affected by preventable or curable conditions, such as infected teeth, infected tonsils, constipation, faulty diet; and mental poison such as home worries, suppressed or thwarted emotions or aspirations, conditions which may, and probably do have far more influence on working capacity than mechanical environmental influence—even hard work and long hours, unless carried to irrational extreme.

In a recent report by Vernon,[18] an attempt is made to distinguish between the factor of fatigue *per se* and other environmental factors, such as exposure while in a state of perspiration and other careless habits while at work. An excess of rheumatism and respiratory troubles are related to such causes rather than to fatigue. There is failure in this discussion, however, to consider the influence of original physical defects or infection, such as infected teeth, infected tonsils, etc., as factors in lowering resistance to fatigue, morbidity and mortality in the occupations studied. There is implied recognition of this principle, however, in the general conclusions drawn, as follows:

> The data as a whole appear to indicate that in men of good physique the fatigue of heavy work has, as a rule, but little direct effect on sickness and longevity. * * *

At the time these observations were made, many of the steel smelters, rolling-mill men and blast furnace men were on a twelve-hour day, while the puddlers were usually on an eleven-hour day.

In contrast to the syndrome of industrial fatigue we have the syndrome of unemployment. Dr. Wade Wright[22] has described a condition noted at the Massachusetts General Hospital during the periods of unemployment which could properly be so characterized. Apparently able-bodied men would come to his clinic complaining of vague digestive disturbances, headache and other conditions apparently of a functional type, and these men were often accompanied by their wives who endeavored to assist in explaining the patients' condition. These cases were so numerous that they were critically followed up and their relationship to unemployment fairly established, and psychiatric consultation enlisted in analyzing the symptoms. It was definitely concluded that they were a distinct class created by the conditions of unemployment, and analogous to psychoneurotic types that had been observed during the war, when invalidism, idleness, hospitalization, or other circumstances, were the evident root causes of the psychoneurosis. It is recognized by specialists in this field that normal productive occupation, sufficient to make a full call on the powers of the individual, is the most effective means either of prevention or of cure.[23]

The main contention in this argument is that fatigue is a problem in pathology as well as physiology; that the pathological factors causing fatigue have not been given due consideration in previous investigations; that these factors should be accorded adequate consideration in future researches, lest false standards with regard to the optimal working day be set up for the working population, and a compromise made with subnormal health conditions.

Now that there is such a flood of light being thrown on the underlying condition of industrial workers, it is necessary to restore balance in fatigue investigations and take account of the enormous pathological factors that have heretofore been wholly ignored. To bring out clearly the principles involved, the following extreme illustration may be serviceable:

Referring again to the comparison of an eight-hour plant with a ten-hour plant, let us assume that all the individuals in each group are tuberculous. It is quite conceivable that the workers in the eight-hour plant, or even the workers in a four-hour plant, would in the long run give a better account of themselves than the workers in the ten-hour plant. But it would be very unfortunate to proceed from such an experience to draw the conclusion that an eight-hour day or a four-hour day would be the optimal working period for a reasonably healthy subject. The shortening of the hours of labor has not constituted a fundamental correction. It is merely a surface correction that does not strike at the root of the trouble. A working population in which there is a large percentage of focal infection, constipation, uncorrected visual deficiency, flat-foot, sub-nutrition and the like, is different in degree but not in kind from a population that is tuberculous. It is quite conceivable that if the workers in the eight-hour plant and the ten-hour plant have their physical deficiencies corrected to a reasonable extent, there would be no difference whatever in the efficiency or rate of productivity in the two plants, and until these physical factors and original physical states of the workers have been ascertained and their influence investigated, it is scientifically incorrect to explain any recorded improved efficiency in an eight-hour plant as compared to a ten-hour plant, wholly on the ground of shortened hours of labor or the labor-saving devices in the plant.

The greatest danger in such a misinterpretation lies in the fact that false standards will be set up for those in a sound condition of health and a com-

promise made with subnormal health conditions, most of which can be corrected or, at least, mitigated. To put it more tersely, the threshold for fatigue is lowered in the sub-standard individual. The mere psychological effect on such an individual of a ten-hour day may impair his rate of production throughout the day, and it is easily understood how his work in the latter hours of the day might be negligible. There are no studies thus far made that reveal the threshold for fatigue in a working group that is reasonably free from physical defects.

The eight-hour day may prove to be the optimal day for the average worker on the broad ground of social welfare and happiness, but it should not be fixed as the physical limit of normal healthful labor without adequate supporting scientific evidence.

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THE RELATION OF PUBLIC HEALTH NURSING TO OTHER PHASES OF WORK OF THE STATE BOARD OF HEALTH, WITH SPECIAL REFERENCE TO THAT OF THE DIVISION OF CHILD HYGIENE

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MOST state boards of health are organized along lines of functional activities which represent a composite of specialties. For convenience in considering this subject we will group the activities as (a) vital statistics and (b) all other phases of health work. The latter classification represents the essentials of a united effort to materially affect the conditions revealed by the former, viz., morbidity and mortality statistics. The so-called "all other phases" represent merely a means to an end, the ultimate aim of all health work being tangible results.

Having a direct relation to a common aim, the relationship of all phases of work of a state board of health is direct. Representing, as public-health nursing does (generally speaking), the most recently developed activity of the majority of state boards of health, its greatest possibilities for service are (a) as a supplementary factor in strengthening activities already undertaken, and (b) in developing new preventive and educational activities that belong to the field of nursing. Thus the stage of development and the type of organization of a state board of health largely determine the position of public-health nursing therein.

The question arises how public-health nursing may best serve the state board of health: (1) As an independent bureau or division of equal rank with all other divisions; (2) combined with a division of child hygiene, or (3) as a subordinate activity of the child hygiene or some other division.

THE FIRST PLAN: AN INDEPENDENT DIVISION OF PUBLIC HEALTH NURSING

Organization on a basis coördinate with other divisions is the plan generally favored. Of the eighteen state boards of health replying to an inquiry regarding the position occupied by public-health nursing and its relation to child hygiene work, four have independent divisions or bureaus of equal rank with other divisions, one is contemplating this, and two others favor it, though they have not yet established such divisions.

It is imperative that the head of such a division be a liberal-minded public-health nurse of large experience, who is able to appreciate a health officer's point of view toward public-health nursing (whether he be a state or county official), as well as a nurse's point of view, and who can uphold the dignity of the state and of her own office. She and the health officer must have mutual respect for and confidence in each other.

The advantages of such a plan are many:

(a) With a division so established, responsibility for management and development is placed where it rightfully belongs, viz., upon nurses, corresponding to the responsibility of a hospital nursing staff. This encourages initiative, for best endeavors and results are secured in proportion to responsibility placed.

(b) An independent division of nursing insures the greatest amount of work with the fewest workers and least expenditure.

(c) The plan admits of linking up

with the official health agency a number of independent workers in isolated fields throughout the state, thus increasing the nursing staff without affecting the budget. The advantage of having such an increased staff interpreting to their localities the aim and activities of the state board of health is obvious.

(d) In return, independent workers derive the advantage of advisory and supervisory service from the official health agency, which they desire, and feel the board of health should be in position to supply. They accept supervision as leadership that insures the best type of service, upon which results so largely depend. (Why should not industrial, tuberculosis, infant hygiene and other public-health nurses throughout the state be local representatives of the nursing division of the state board of health?) Should any one be permitted to work as a public-health nurse in ignorance of the policies of her state board of health and existing public-health laws, or even without authority to enforce such laws if she is the only health worker in her community?

From an economic standpoint it is usually impracticable for each division to develop and function independently so far as nursing personnel is concerned.

It is sometimes difficult for a director of a division of nursing to keep the heads of other departments satisfied with the amount of nursing assistance they receive. This demand may be met by having a public-health nurse detailed to any other division of the state board of health for service in executing the nursing part of that division's program. Such a plan has worked the past two years in North Carolina; a public-health nurse from the Bureau of Public Health Nursing goes with each county tuberculosis diagnostic clinic. An examining physician supplied by the State Tuberculosis Association, and the county Red Cross nurse complete the clinic personnel. This places the administration of the tuberculosis clinic, so far as public-health nursing is concerned, as well as the supervision of clinic nurses, under the Bureau of Public Health Nursing, the nurses assisting in securing results for the Division of Tuberculosis.

Such a plan works equally satisfactorily with the Bureau of Epidemiology, with which the midwives register. A representative of the Bureau of Public Health Nursing has kept appointments made by the Bureau of Epidemiology in ninety out of one hundred counties where midwife conferences were held. Acquaintance with laws regarding midwifery, and demonstrations of compliance therewith, have obtained for the Bureau of Vital Statistics more complete records, secured a larger registration of prenatal cases in the Bureau of Infant Hygiene, and reduced undesirable results in the Bureau of Epidemiology—all through the medium of the Bureau of Public Health Nursing.

Similar satisfactory coöperation with the Bureau of County Health Work has been established, where the Red Cross county nurses, working under the general supervision of the Bureau of Public Health Nursing are detailed to the personnel of the county health departments. The plan also works in conducting child-health conferences in different counties. The Bureau representative keeps the United States Public Health Service records of examinations made by the county health officer, assisted by the county nurse. The results are credited to the county health departments.

(e) Public-health nursing in the future will have a wider field and occupy a less exclusive position. Being primarily educational and preventive, public-health nursing as a part of the whole activities of a state board of health affects beneficially all branches of the work, whether sanitary improvements, compliance with public-health laws, or maternal and infant hygiene.

(f) Representing the heretofore miss-

ing link between the health department and the home, a separate division of nursing tends to build up machinery of great assistance in carrying out the program of a child-hygiene division, and fundamental to its success. However, child hygiene and public-health nursing cannot be tied up as though they were one and the same thing. A nursing staff alone does not adequately fulfill the functions of a division of child hygiene, nor are public-health nurses necessarily qualified to carry on all types of child-hygiene work.

A division of child hygiene warrants the full attention of the medical staff, plus the coöperative assistance of public-health nurses, nutrition experts, dental hygienists, and expert pediatricians—all doing child-hygiene work, and none of whom can entirely satisfactorily be replaced by a different type of worker. There is little in the child-hygiene field that belongs peculiarly to one type of worker. An ambitious program for an inclusive child-hygiene division has been outlined to cover: prenatal care, infant care, preschool care, children of school age, supervision of environment, children in industry, mental health of children, neglected and dependent children, etc.

There are certain things which make practical, though not so desirable—

THE SECOND PLAN: COMBINED DIVISION OF CHILD HYGIENE AND PUBLIC-HEALTH NURSING

Chief among the reasons for such coördination are: (a) economic necessity; (b) the stage of development of the state board of health, and (c) a situation in which part of the child-hygiene interests are delegated elsewhere. This plan obtains in North Carolina, as public-welfare legislation covers the dependent and delinquent child. A previously established division, that of Medical Inspection of Schools, operates corrective clinics (dental, tonsil and adenoid), and provides for physical examination of school-children.

Seven of the state boards of health which replied to our inquiry had combined divisions of child hygiene and public-health nursing. They report as follows:

Three, satisfactory arrangement for the present.
One, established with idea of later having separate divisions of child hygiene and public-health nursing.
One, thinking favorably of making two divisions of equal rank.
One, wishing two divisions, but because the public-health nurses are doing more child-hygiene work, and for purposes of economy in administration, will remain coördinated.
One, growing rapidly into two divisions of equal rank.

THE THIRD PLAN: A SUBORDINATE ACTIVITY OF CHILD HYGIENE OR SOME OTHER DIVISION

If the child-hygiene division is not to absorb most of the activities of a state board of health, the complete nursing staff should not be a subordinate activity. Should the benefits of public-health nursing be thus restricted to any particular age group? Even though the need in this group is possibly greatest, should the next greatest need be lost sight of? Only when public-health nursing has developed as the outgrowth of one piece of health work in states with adequate medical, hospital, dispensary, and clinic services, should it occupy a subordinate position in one of the divisions. Such a plan might be satisfactory to that particular division but it precludes the possibility of public-health nursing operating in the field of rural sanitation and epidemiology as they affect children, as well as other interests which should be the legitimate function of other divisions.

Only one state board of health expressed the belief that this type of organization was advisable.

CONCLUSIONS

We believe, therefore,

1. That the ideal scheme for proper correlation is for a division of public-

health nursing to be an independent bureau, giving service to each division of the state board of health according to its particular needs, but being maintained as a separate and distinct division of equal rank with other divisions of the state board of health.

2. That the next most satisfactory plan is to combine the public-health nursing division with that of child hygiene, as it is most closely allied to child-welfare activities.

3. To regard public-health nursing as subordinate to any one division of a state board of health precludes the possibilities of its greatest service in securing public-health results, and is least to be desired.

4. That the executive health officer of a state is in best position to judge of the relationship most practicable for his state.

□

Red Cross Health Talks.—For some time the public has been familiar with health movies produced under the auspices of the American Red Cross. A little less than a year ago, the New York County Chapter, American Red Cross, instituted a new service of arranging health talks. This was done through a Health Speakers' Bureau organized in the Health Service Department of the chapter.

At the close of 1921 after 20 months' experience, the Red Cross Health Speakers' Bureau has arranged 665 health talks in Manhattan for 184 organizations, reaching an estimated attendance of 116,200.

The most cordial and unfailing coöperation on the part of the health department and other public-health agencies of the city has made the work of the Red Cross Health Speakers' Bureau possible. The Red Cross offers the service of a highly organized bureau, knowing thoroughly the resources of the public-health agencies in the way of speakers who can give popular talks on health, and being in intimate touch with various groups wishing health talks. The Red Cross service has been to bring these two bodies together —those wishing health talks and those trained to give them in a popular way.

The various groups before which these 665 health talks have been given are as follows:

Thirty-five schools (private, public and parochial) have had 169 talks arranged for them by the Red Cross. Nineteen settlements have had 72 talks. Forty-two churches have had 79 talks. Twenty-nine shops and factories have had 123 talks. Miscellaneous groups such as Y. M. C. A.'s, Y. W. C. A.'s, Y. M. H. A.'s, women's clubs, Rotary clubs, Salvation Army, boy and girl scouts, parent-teacher associations, maternity centers, clinics, day nurseries, health centers, Seaman's Institute, church clubs, etc., have also had talks.

The four most popular subjects for the talks arranged before public school assemblies are nutrition, oral hygiene, personal hygiene, and care of the eyes. There is a constantly increasing demand for talks on food, illustrated with attractive posters and models.

The Bureau is always more interested in planning for a series of four or more talks for each group in preference to a single talk, because of the larger educational value of the series. Of the 665 talks arranged, 542 were in series and only 123 single talks.

This is a new Red Cross service which does not duplicate the work of any other agency, which is offered without fee, and which has infinite possibilites of further development.

THE NEW GARBAGE REDUCTION WORKS AT ROCHESTER, N. Y.

EDWIN A. FISHER

Consulting Engineer to the City of Rochester, and Superintendent of City Planning, Rochester, N. Y.

Read before the Sanitary Engineering Section of the American Public Health Association, at the Fiftieth Annual Meeting, New York City, November 18, 1921.

THE city of Rochester is situated in Monroe county, New York State. It lies in latitude about 43° north and longitude 77° west.

The city is nearly bisected by the Genesee River, which flows through it from south to north. The river has an aggregate descent within the city of about 260 feet. Rochester is bounded on the north by Lake Ontario, and is surrounded otherwise by fertile farms and gardens. Its population and area, and the amount of garbage collected in periods of five years from 1900 to 1920, was as follows:

Year	Population	Area in sq. miles	Garbage, tons
1900	162,608	18.18	.....
1905	181,670	19.16	21,800
1910	218,149	20.42	23,265
1915	248,469	23.72	34,937
1920	295,750	32.64	32,538

The collection and disposal of garbage has been done at the expense of the city since 1880, a part of the time by day labor and the remainder by contract. During nearly all of the period from 1880 to 1900, this work was under the supervision of the Board of Health. In the year 1900, by an amendment to the charter, the collection and disposal of garbage was transferred to the Commissioner of Public Works, and from that date to the year 1907, yearly contracts were made by the Board of Contract and Supply and the garbage disposed of by the contractor for feeding pigs, and as fertilizer for the surrounding towns.

In 1906 the writer made an extensive investigation of the disposal of municipal wastes. He recommended a separation of the ashes and rubbish, and the construction of a suitable plant within the city for the disposal of the wastes in the rubbish by burning. He also recommended a contract for the collection and disposal of garbage for a period of five years, the disposal to be by the reduction process.

The recommendations were adopted by the mayor and the Common Council, and a contract was made with the Genesee Reduction Company for a five-year period, at the end of which another contract was entered into for a similar period.

On January 1, 1917, the city took over the entire plant of the contractor, under the provisions of the contract, at a cost of about $125,000. Prior to this time, the city had constructed an incinerator having a capacity of 100 tons per day, for the burning of rubbish, on grounds adjacent to the garbage plant.

LOCATION OF THE PLANT

When the first contract was let in 1907 it was the intention of the city administration to locate the garbage plant in one of the adjacent towns. The authorities of all the surrounding towns obtained injunctions preventing the city from disposing of garbage within their limits. It was therefore necessary to locate the plant within the city. Numerous sites were suggested, and the location finally fixed upon was on the river flats just across the Genesee River from the gas works. Its location and approaches were the least objectionable that could be found at that time.

The plant, as located, was within 500 feet of one of the main thoroughfares of the city, and nearly in the geographical center. It was therefore necessary that the plant be so operated that it would not create a nuisance. The plant built by the contractor and taken over by the

city was a modification of the Arnold Reduction Process. The process, however, was only carried to the extent of cooking the garbage in digesters by steam, and pressing it in open compressors. The recovery, therefore, of grease and tankage was comparatively small.

During the first period of the five-year contract some complaints arose from residents in the vicinity of the plant, and in the specifications for the second contract a provision was inserted for a water curtain to absorb the gases coming from the plant. While these devices had a psychological effect at the time they were introduced, they were of little value in preventing odors.

The plant, as taken over from the contractor on January 1, 1917, was operated by the Commissioner of Public Works, with no change in the process. The recovery of grease and tankage, as has been said, was exceedingly small, and during the year 1920 amounted to seven-tenths of one per cent of the original garbage in grease, and about nine per cent in very poor tankage.

Immediately after the plant was taken over by the Commissioner of Public Works, it was apparent that an improvement in the conditions was imperative. An extensive investigation of different types of plants, and of methods for the collection and disposal of garbage was made by the Commissioner of Public Works and the writer during the years 1916-1917. The Bureau of Municipal Research also made extensive studies of methods of disposal.

From our previous experience in finding a location for a plant, it was our opinion that the present location should be used for the new plant. Studies were made of plants of the same general type as the one we had, but which continued the process for a more complete recovery of grease and a much better quality of tankage. An inspection of the best type of plants of this kind satisfied us that it would be impossible to operate one in our particular location without great offense.

The question of locating the plant on the sewage disposal grounds at the Lake, some seven or eight miles from our present plant, was considered, and a special investigation of the operation of loading stations in other cities was made by the Commissioner and the writer. This gave us the knowledge that it would be almost as difficult to locate loading stations here, including the approaches, as to locate a plant.

The result of our investigations, as well as the studies of the Bureau of Municipal Research, satisfied us that the plant having the least objections was that known as the "Cobwell System," operated at that time in Los Angeles and in New Bedford. We were not unmindful of the fact that a plant of this kind had been built and discarded in the city of New York, but from a careful study of the reports of the hearings, and from personal statements by those acquainted with the conditions, we were satisfied that the plant in New York was not in all its details properly designed, and was not of sufficient capacity to take care of the garbage offered.

We insisted that our plant should be of sufficient size to take care of all the garbage delivered from day to day, without storage. We, therefore, provided for a normal capacity of 128 tons per day, or 40,000 tons per year, with a peak load of 180 tons per day. The garbage delivered for the year 1920 was, as has been stated, 32,538 tons, or about 102 tons per day.

There is also provision in the plant, as designed, for four additional units, making the total normal capacity of the plant 144 tons per day, and the maximum peak load 200 tons per day.

A description of the plant, taken from the Cobwell specifications, is as follows:

The Cobwell System for garbage disposal has been developed by the Cobwell Corporation, Cleveland, Ohio, and is at present being operated in Los Angeles, California, New Bedford, Massachusetts,

and by the Masek Rendering Company, Cleveland, Ohio. The city of Syracuse, New York, is now installing a plant of this type.

By this process, practically all the work is done in one type of machine, called a reducer. The garbage, as delivered to the plant, is loaded into the reducer, which holds approximately four tons of raw garbage. As soon as the reducer is loaded, it is sealed and the material submerged in a solvent which acts as a dehydrating agent. The mass is then heated by turning steam into the jacket surrounding the reducer tank, so that the steam does not come in direct contact with the garbage. Due to the fact that there is a mixture of solvent and water in the garbage during the dehydrating period, the non-mixable liquids boil at a boiling point lower than the boiling point of water. The low temperature prevents, to a large extent, the breaking down of materials, the temperature being approximately from 200 to 210 degrees Fahrenheit.

After the steam is turned into the jacket, a vertical shaft at the center of the tank, to which are fastened two agitating blades, is set in motion. These blades, revolving on the bottom of the tank, serve the double purpose of keeping the garbage agitated to hasten operation, and later of discharging the finished material. The steam is kept on the jacket during a period sufficient to drive off all the moisture originally in the garbage, in the form of vapor, together with the solvent vapors. The vapors are carried through a pipe line to a closed condenser, where the solvent and water are condensed and then separated by gravity, with the recovered solvent returned to storage for further use. When the water has been entirely eliminated from the garbage, the material has been both digested and dried. The steam is then turned off of the jacket and the solvent removed, carrying with it the grease which was taken up in solution. The digested or dried material is then given additional washes in order to recover all the grease originally contained in the material. After washing, or the drawing off of the grease and solvent, the remaining solvent, which saturates the dry material, is then vaporized and passes off through the vapor lines to the condenser. When the solvent is entirely eliminated, the reducer is opened and the tankage is discharged on to conveyors and conveyed direct to the screening, grinding, and storage room, where it is ready for sale or shipment.

CAPACITY

The capacity of the machinery and equipment will be sufficient for treating normally 128 tons of garbage and dead animals daily, with a capacity for handling up to 180 tons of such material in one day of 24 hours during periods of peak delivery, with all equipment operating.

The following described structures are included in the plant:

1. A receiving building, 35 by 41 feet, houses the unloading platform and storage of, and conveyor for handling the green garbage.

2. A reducer building, 70 by 145 feet, houses the 36 reducers, with room for additional ones, the conveyors for loading the reducers, and conveyors for removing the dry tankage. Galleries in this building contain the motors for operating all machinery.

3. A pump house, 45 by 33 feet, contains the pumps for circulating the solvent and grease, also stills for reclaiming solvent and processing the grease, as well as solvent and water separators.

4. A mill and storage building, 35 by 116 feet, houses the tankage screen and crusher, with storage space for dry tankage.

5. A wash room, 25 by 14 feet, contains toilet room and locker space for the employees.

6. Coolers and condensers with solvent storage tanks are outside but adjacent to the pump house.

7. A conveyor and pipe line for the

shipping of tankage and grease extend to a railroad siding.

A contract for the plant, including the necessary buildings, was awarded to the C. O. Bartlett & Snow Company on January 28, 1920. Additional grading and paving of the grounds, river retaining walls, and a tankage conveyor from the plant to the railroad track of the R. W. & O. Division of the N. Y. C. R. R. will cost about $100,000, making the total cost of the work approximately $750,000.00.

The present equipment of the plant, with the addition of the four extra digesters provided for, will take care of the normal increase of population in the city for the next eight or ten years.

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THE VALUE OF COOPERATION BETWEEN THE FOOD MANUFACTURER AND THE FOOD OFFICIAL

JOHN P. STREET, M.S.

Director of Inspection, National Canners' Association, Indianapolis

Address of the Chairman, Food and Drugs Section, Fiftieth Annual Meeting, American Public Health Association, New York City, November 14, 1921.

TO anyone familiar with the activities of both federal and state food departments during the past twenty years, the decline in food adulteration during that period is clearly apparent. Prior to the passage of the Federal Food and Drug Act in 1906, and, in fact, for some years after its passage, in the purchase of many kinds of food products, the purchaser, unless peculiarly alert and well informed, was more than likely to receive sophisticated foods, often containing ingredients actually dangerous to health. To-day such adulterations are rare indeed, and in spite of many technical violations of the laws, food adulteration, in the strict sense of the term, has become a matter of academic interest rather than one vitally affecting the health of our people.

In the good old régime certain manufacturers, more interested in immediate profits than in the quality and integrity of their products, did not always play the game fairly and aboveboard. Unfortunately, this bred in the official mind distrust of manufacturers in general and their methods. In those days, the mere fact that a food manufacturer advocated a certain line of procedure was enough to put the official on his guard, and frequently regulations were put into effect that were over-drastic, ill-advised, and, in some cases incapable of being carried out by the manufacturer without the complete sacrifice of his profits, or a lowering in the quality of his product.

There was a time not so many years ago, when for any food official to indulge in even moderately intimate intercourse with a food manufacturer was indeed a precarious performance, and by so doing, he laid himself open to criticism from trade rivals of the manufacturer in question, as well as from some of his narrow-visioned official confreres. A few officials, conscious of their own integrity and the purity of their motives, were courageous enough to go out into manufacturing plants, study manufacturing processes, and learn first hand the difficulties confronting the manufacturer. These officials soon learned the futility of drawing up rules and regulations based on experience gathered in the office or laboratory, rather than in the factory itself. Gradually, this leaven worked through the whole mass of officialdom until now it is reasonably safe for an official to enjoy quite intimate relations

with manufacturers without harming his official or professional reputation.

These results have been brought about partly by the officials, but also in large measure by the manufacturers themselves. It is common knowledge to all food officials that certain food products, when first offered in our markets, were sold not on their own merits but rather in the guise of a better known product of a similar nature and commanding a higher price. These products, while often possessing high food value and being valuable and economical additions to our dietaries, more and more excited the distrust of the officials and the consuming public, simply because in their early days they were commonly used for adulterants, or because they were sold for something which they were not. In recent years their producers have been spending huge sums of money to gain the public confidence which was lost by shortsighted initial policies. To-day with rare exceptions the manufacturer, introducing a new product on our markets, presents it squarely on its merits, and tries to stimulate a demand for it because of its own virtues and its adaptability to American dietary conditions. Various shortening compounds, the nut margarines, and the skim milk-cocoanut oil compounds are illustrations of new food products that are offered by the manufacturers strictly on their own merits.

Again, certain food manufacturers have learned, sometimes by bitter experience, that they had been using antiquated, rule-of-thumb methods of manufacture, and that the chemist and food official can be of distinct value to them in improving the quality of their product. This is especially true as regards factory sanitation. The improvement in factory sanitary conditions during the past ten years is very impressive to one who has visited the plants and who has learned the infinite pains taken by the high class manufacturer to turn out a product that is clean and wholesome in every respect. This has come in part from an increased popular interest in sanitation, as evidenced by the adoption of sanitary codes in many of our states, and in part from the realization by the manufacturers themselves of its importance. In this connection, it is an interesting sign of the times that certain industries are realizing the necessity of a strict sanitary control in their manufacturing processes, due in part to their appreciation of their obligation to the consumer to produce clean products packed by clean people in a clean factory, and in part due to their conviction that any food producer who is not willing to meet proper sanitary requirements is a detriment to the industry and is entitled to no place in its counsels or trade associations. The National Canners' Association already has taken such a stand, and it is understood that the baking industry contemplates a similar system of self-inspection, so that more and more the consumer will be able to buy prepared foods with the assurance that the manufacturer has done everything in his power to render his product safe and wholesome and worthy of confidence.

From an experience gained both in the ranks of the food officials and as a representative of a great trade organization, I am convinced that certain pitfalls menace the pathway of the unwary official that may lead him unwittingly to adopt lines of action that may bring great injustice to legitimate industries, or that may make him the unconscious tool in a trade controversy.

As already stated, it is not wise or safe for the official, bathed in the academic atmosphere of his office, and often limited in his practical experience by the four walls of that room, to draw up rules and regulations, which, though possibly sound in theory, cannot be carried out without a serious lowering in the quality of the product affected. An illustration of this is the matter of fill. I believe I am safe in stating that

no reputable manufacturer has any desire to foist on the consuming public slack filled containers, and that, with very few exceptions such manufacturers fill their packages as full as is consistent with the mechanical limitations of their filling machines, and with the exigencies of their manufacturing processes. However, to-day there is a bill before Congress requiring that all food packages be filled absolutely full, without any consideration of permissible variation. Should such a bill pass, the production of any food product which requires processing and sterilization after being put into the container, would practically cease, and the public would be deprived of a valuable economical and wholesome source of food supply. Absurd and unreasonable as such a situation may seem, it is nevertheless true that certain food officials and certain official organizations have endorsed this destructive bill without demanding amendments that would maintain its principle of an honest food package, and yet protect legitimate industries.

It is also unfortunately true that legislation is often introduced, ostensibly in the interest of the public, when in reality, its main purpose is to secure an advantage for one branch of industry over a trade rival. It is obviously improper for any food official to endorse such legislation, or do anything to facilitate its passage. Every food department is supported by funds received from the taxation of all the people, and no official has any right to use his influence to encourage regulation that will benefit one class of legitimate manufacturers at the expense of other manufacturers, equally legitimate, and quite as deserving of public confidence and support. These suggestions are, of course, perfectly obvious, and perhaps would scarcely need repetition at this time were it not for the unfortunate fact that at times officials forget that they are food commissioners in the broad sense of the term, and not representatives of a single branch of the great army of food producers.

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International Journal of Public Health Suspends Publication. — *The International Journal of Public Health*, the publication of which was begun in July, 1920, has proved useful to public-health workers in all of the many countries it has reached, and has helped to make known, in official and professional circles, the peace-time health program of the League of Red Cross Societies, based on the development of strong national Red Cross organizations capable of educating the people in the principles of hygiene and their practical application.

In spite of the expense of publication in several languages, it had been hoped until recently that the *Journal* could be continued until it should establish itself on practically a self-supporting basis. The League, however, has now decided to concentrate its efforts, and consequently its resources, on the promotion of popular health instruction through the agency of the Red Cross. It will continue to publish the *Bulletin of the League of Red Cross Societies*, the scope of which will be somewhat modified in order to devote greater space to scientific information on health matters. It has therefore been decided, though with the greatest regret, to discontinue the *Journal*.

Every possible effort has been made to persuade other international organizations interested in hygiene to undertake or to subsidize this publication, but so far without success. Efforts will be continued in the hope that a periodical which in its eighteen months of existence has won for itself so definite and important a place in the field of international public health, may be resumed under more favorable circumstances and after as short an interruption as possible.

EDITORIAL SECTION

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AN INTERESTING STEP IN CHINA

On the first of last December, preliminary steps were taken for the organization of a National Health Association in China. The organization meeting was held in Shanghai.

The public-health movement in China has for some time been promoted by such organizations as the Council on Health Education, representing five medical, missionary, and Christian associations, and the China Medical Board of the Rockefeller Foundation has likewise been active in establishing a great central medical school.

Now, however, there is to be a National Health Association, which has a most ambitious and well-conceived program, embracing five major activities:

The first is a "health museum." By this, apparently, is meant a traveling health exhibit, illustrating the nature, scope, methods, and significance of public health.

Then there is to be a local health demonstration, somewhat of the type of the tuberculosis demonstration at Framingham, Mass., and the child health demonstration at Mansfield, Ohio. A single city is to be selected for the installation of a modern health department, which will give actual proof that with proper methods the death-rate in China can be reduced.

Third, there will be research and information activities. At first thought it seems strange that a nation should feel the need of public-health research, when it has scarcely made a beginning in applying what is already known. It must be borne in mind, however, that the climatic and social conditions in China create problems that are not always successfully met by Western methods.

It is also proposed to establish what is called a "health brigade," a sort of flying squadron which will respond to emergency calls for the suppression of epidemics.

Finally, efforts will be concentrated on educating the young in the principles of health. In a country where the majority of adults are illiterate and fettered by "can'ts" and "don'ts," the obvious method of education is through the child.

It should be a source of pride to America that the leader in this movement is a Chinese who was educated for public health in American schools, namely, Dr. S. M. Woo, a co-worker of Dr. W. W. Peter, the American secretary of the Council on Health Education of China.

The American Public Health Association wishes these public-health workers in China the best of success in their great undertaking.

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LIFE SAVING OR PUBLIC HEALTH?

Editor's Note.—The following statement by a man of broad executive experience in non-official health agencies is published by the JOURNAL in the hope of stimulating discussion and thought among health workers as to the proper functions of health administration. While disclaiming responsibility for its implications, the JOURNAL feels that it embodies a point of view that should not be forgotten.

To the public-health official the development of his administrative machinery may appear to be an end in itself. To the layman, or at least to the man who foots the bill, life-saving and the prevention of sickness will probably appear more fundamental. This distinction is vital. Unless it is kept in mind, an overdevelopment of means—of one of the means, public-health work—may lead to the discomfiture of the general program of life-saving.

This situation is undoubtedly, to a degree, responsible for the fundamental difference in point of view of the average doctor and the average public-health officer. The doctor, being at all times close to sickness of all kinds, senses his importance in any program of life-saving. Doctors outnumber public-health officers more than 100 to 1. They are close to the patient, and his recovery or demise, whether he suffers from a communicable disease or from some other ailment, depends very largely upon the quality of service he receives from the doctor. It is well known that only a fraction of all deaths, a little less than 10 per cent, are due to communicable diseases, and that the public-health officer may claim decisive influence only in case of a minor part of even this ten per cent.

The wise health officer undoubtedly appreciates the fact that the efficiency of his own work depends very largely upon the efficiency of the average doctor as well as upon an intelligent and responsible attitude of the public toward public-health functions. It would seem important for the health officer to guard against an overdevelopment of health functions. This is apt to be followed by increased

cost of work with decreased results. A balance must at all times be aimed at in the life-saving program. An overdevelopment of public-health functions which upsets this balance may seriously interfere with progress towards a lower death-rate and a lower sickness rate. SANTÉ.

THE NEW CONSTITUTION OF THE A. P. H. A.

In this issue we print the revision of the Constitution and By-Laws of the American Public Health Association which was adopted as amended at the Fiftieth Annual Meeting.

Following are some of the more important changes that were made:

The name of the Board of Directors was changed to "Governing Council," and the name of the Executive Committee was changed to "Executive Board." The change was made mainly for legal reasons, in order to permit the smaller body to transact such business as the signing of the leases, handling of funds of the Association, and transacting other strictly business matters, leaving it to the larger body to establish policies of the Association.

The number of elective members of the Governing Council was increased from 15 to 45. On the other hand, the provision was dropped whereby ex-presidents of the Association automatically became members of this governing body. It was felt that the new arrangement would insure more democratic control in Association policies.

In order to insure a reasonable influx of new blood into the Governing Council, elective councilors, after two consecutive terms of office, were made ineligible for reëlection during one Association year.

The power to amend the Constitution was transferred from the Governing Council to the membership of the Association, with the proviso that the amendment should first receive the approval of the Governing Council.

The policy of the Association with regard to publications, finance, and committees, has been incorporated into the Constitution.

In the By-laws dues have been established for affiliated societies.

A new type of membership has been established, namely, fellowships. Only those who have been in the Association for five years are eligible to election as fellows by the Governing Council.

The relation of the sections to each other, and to the Association as a whole, has been specified, and the Governing Council has been empowered to create, discontinue, and to regulate sections.

The February issue of the NEWS LETTER has been omitted, but publication will be resumed during the progress of the membership campaign, which begins this month. For reasons of economy the Executive Board of the Association has adopted a policy of publishing the NEWS LETTER only when occasion demands.

CONSTITUTION AND BY-LAWS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

AS ADOPTED BY THE BOARD OF DIRECTORS, NOVEMBER 14, 1921, NEW YORK CITY

ARTICLE I

NAME

The name of this Association, incorporated under the laws of Massachusetts, is the American Public Health Association.

ARTICLE II

OBJECT

The object of this Association is to protect and promote public and personal health.

ARTICLE III

GOVERNING COUNCIL

A. Composition: There shall be a Governing Council consisting of:

1. The officers of the Association.

2. Forty-five members of the Council, to be elected, with due regard to geographical and membership considerations, by and from the membership of the Association for three year terms, one-third retiring each year.*

3. A representative designated by each Section to serve for two years.

4. Each affiliated society shall have the right to designate one of its members to serve for one year on the Governing Council.

B. Terms: Terms of Councilors shall begin at the end of the annual meeting when elected, and shall terminate at the end of the annual meeting at expiration of term, provided that Councilors shall have the right to attend meetings of the Council in an advisory capacity as soon as elected.

C. Reëlection: After two consecutive terms an elective Councilor shall be ineligible for reëlection to the Council during one Association year.

D. Officers: The officers of the Association shall be the officers of the Council.

E. Functions: The functions of the Council shall be:

1. To establish policies for the Association and for the guidance of the Executive Board and the officers.

2. To establish Sections of the Association and to maintain coördination among them.

3. To submit to the vote of the Association all resolutions which have received the approval of the Governing Council.

4. To elect affiliated societies, fellows and honorary fellows as provided in the By-laws.

5. To elect the Executive Board and the officers of the Association.

6. To receive from the President, on behalf of the Executive Board a report on the meetings, policies and work of the Executive Board, a report from the Executive Secretary concerning the administrative work of the year, and a report from the Treasurer concerning the finances of the Association.

F. Quorum: A quorum of the Council shall consist of ten Councilors.

ARTICLE IV

OFFICERS

The officers of this Association shall be a President, three Vice-Presidents, an Executive Secretary, and a Treasurer. The officers shall be nominated and elected by written ballot of the Governing Council. Officers shall serve from the close of the annual meeting when elected, until the close of the next annual meeting, and until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained.

*By special action of the Board of Directors, fifteen members were elected at the Fiftieth Annual Meeting to serve for 1 year, fifteen for 2 years and fifteen for 3 years.

ARTICLE V

AMENDMENTS

This Constitution may be amended by a two-thirds vote of the members of the Association present and voting at an annual meeting, provided that the specific amendment to be acted upon is published in the official publication of the Association not less than thirty days prior to the meeting, and provided further that the amendment has received the approval of the Governing Council.

BY-LAWS

ARTICLE I

MEMBERSHIP AND DUES

A. There shall be six classes of members who may be elected from the countries now represented in the Association and such other countries as may be admitted. The respective appellations, qualifications for election, and dues shall be as follows:

1. Members: Interest in health conservation. Dues $5.00 per year.

2. Sustaining members: Interest in health conservation. Dues $25.00 per year.

3. Affiliated societies: Promotion, as a society, of the objects of the Association. Dues $1.00 per $1,000 of annual budget appropriation, the maximum dues per society being $100.00 and the minimum dues $10.00 per year.

4. Corporate members: Interest in health conservation. Dues not less than $50.00 per year.

5. Fellows: Active work in the conservation of public health and previous membership in the Association for five years. Dues $5.00 per year.

6. Honorary fellows: Distinguished service to public health. No dues.

B. Affiliated societies: The election of members, corporate members and sustaining members shall be by a membership committee appointed by the Executive Board. Election of fellows, honorary fellows and affiliated societies shall be by the Governing Council upon recommendation of the Membership Committee. All such elections shall be by secret ballot, and three-fourths of the votes cast shall be requisite to election.

C. Dues are payable annually in advance. All members and fellows paying dues shall receive the AMERICAN JOURNAL OF PUBLIC HEALTH and such other publications as may be designated by the Executive Board, which shall determine the proportion of dues to be devoted to this purpose.

D. The right to one vote shall be vested in each of the six types of members enumerated in Section A, Article I, of the By-laws.

ARTICLE II

EXECUTIVE BOARD

A. Composition: There shall be an Executive Board of nine members elected by the Governing Council, six of whom shall be members of the Governing Council, and three of whom shall be the President, Executive Secretary and Treasurer.

B. Terms: The terms of the officers as Executive Board members shall be one year each, and the terms of the other members shall be two years each, expiring in rotation, three each year. These terms shall begin at the end of the annual meeting at which elected, and shall continue until the end of the annual meeting at expiration of term, provided that newly elected members of the Board shall have the right to attend meetings as soon as elected, and shall have no vote until installed.

C. Reëlection: After two consecutive terms a member of the Executive Board shall be ineligible for reëlection during one Association year. This provision shall not apply to an officer of the Association.

D. Officers: The officers of the Association shall be the officers of the Executive Board.

E. Duties: The duties of the Executive Board shall be:

1. To direct the administrative work of the Association.

2. To act as trustee of its properties.

3. To procure funds and to authorize budgets for the Association work.

4. In general to carry out the policies of the Governing Council between meetings of the latter.

F. Quorum: A quorum of the Executive Board shall consist of four members.

ARTICLE III

MEETINGS OF THE ASSOCIATION

There shall be at least one annual meeting of the Association, held at a place to be selected by the Governing Council. Special meetings of the Association may be called by a majority vote of the Governing Council, the Executive Board, or the Association.

ARTICLE IV

SECTIONS

The Governing Council shall have power to create or discontinue Sections of the Association. Sections shall elect their own officers. They shall conduct sessions in coöperation with and under the supervision of the Executive Board. The Governing Council may establish regulations of Sections to each other and to the Association. The Constitution and By-laws of Sections and amendments thereto shall be submitted for the approval of the Governing Council, and shall be valid only after such approval.

ARTICLE V

PUBLICATIONS

All publications of the Association and of its Sections shall be issued under the direction of the Executive Board. The Executive Board shall appoint a Managing Editor of the official journal, who may also be the Executive Secretary of the Association. The Executive Secretary shall, with the approval of the Executive Board, appoint an Advisory Editorial Board of not less than five members, to serve at the pleasure of the Executive Board. All papers and reports for the annual meetings are to be accepted with the understanding that they shall be the property of the Association for publication, except as specifically released by the Advisory Editorial Board.

ARTICLE VI

FINANCES

The Executive Secretary shall receive and deposit to the account of the Treasurer all remittances sent to the Association. The Treasurer shall be custodian of investments of the Association and shall disburse funds in accordance with duly authorized vouchers. With the approval of the Executive Board he may establish a drawing account for the Executive Secretary. The Executive Secretary shall send each month to members of the Executive Board a financial summary of receipts and disbursements. Once each month, or oftener if called for, he shall also forward to the Treasurer and President an itemized statement of all expenditures. The Executive Secretary and the Treasurer shall be bonded at the expense of the Association in an amount to be determined by the Executive Board. The books of the Association shall be audited annually by certified public accountants, to be appointed by the Executive Board.

ARTICLE VII

COMMITTEES

Committees of the Association shall be authorized by the Governing Council or by the Executive Board. The President shall appoint the members of such committees. Such appointments shall expire at the next annual meeting, unless otherwise specified.

ARTICLE VIII

AMENDMENTS

These By-laws may be amended by a majority vote of the total membership of the Governing Council during the annual meeting, provided that twenty-four hours prior written notice thereof has been given. The By-laws may further be amended by two-thirds vote of those voting at any meeting of the Governing Council called for the purpose, provided that notice thereof shall have been given at least fifteen days prior to such meeting.

ASSOCIATION NEWS

LIST OF NEW MEMBERS

Proposed for Election to the A. P. H. A. January 1 to January 31, inclusive.
Names of Sponsors are set in **Bold Face Type.**
Names of New Members are set in Light Face Type.

CONNECTICUT

Mr. P. E. Bransfield, Portland, Conn.
Miss M. Louise Butler, 25 Wall St., New Haven, Conn., Serologist, full time.

MARYLAND

Miss Rosa E. Prigoson, Baltimore, Md.
Miss Charlotte C. Van Winkle, 733 North Broadway, Baltimore, Md.

MISSOURI

Dr. Noah Adams, Kansas City, Mo.
Mr. John M. Baptiste, 401 Delaware St., Kansas City, Mo., Manager of United Chemical Companies.

NEW JERSEY

Mr. Kenneth M. Gould, New York, N. Y.
John J. Szymanski, M. D., 125 Second St., Passaic, N. J., Physician. Part time health activities.

NEW YORK

Charles Krumweide, Jr., M. D., Bronxville, N. Y.
Mr. Clarence V. Ekroth, 461 Eighth Ave., New York, N. Y., Director Ekroth Laboratories.

PENNSYLVANIA

Mr. Kenneth M. Gould, New York, N. Y.
Carey J. Vaux, M. D., City County Building, Pittsburgh, Penna., Director, Dept. of Public Health.

TENNESSEE

Dr. McKiver Woody, Memphis, Tenn.
Mr. C. L. Isley, Jr., Dept. of Health, Memphis, Tenn.

VERMONT

Mrs. E. H. Harvey, Brookline, Mass.
Mary Barbara Dee, B. S., Fairfax, Vermont, Teacher.

VIRGINIA

Mr. Lonsdale J. Roper, Portsmouth, Va.
Mr. William F. Lawrence, 518 Middle St., Portsmouth, Va., City bacteriologist, full time.

WASHINGTON

Dr. John Weinzirl, University of Washington.
Miss Dorothea Taylor, 410 11th Avenue North, Seattle, Wash.

AUSTRALIA

Prof. James O. Jordan, Boston, Mass.
Mr. Henry A. Ward, Wellington, New Zealand, General Manager, Wellington City Milk Dept.

PORTO RICO

Mr. Etienne Totti, San Juan, Porto Rico.
Jose Lugo-Vina, M. D., P. O. B. 52, San Juan, Porto Rico, Secretary of Insular Board of Health.

SOUTH AMERICA

Mr. A. W. Hedrich, New York, N. Y.
Dr. Miguel A. Villavisencio, Av. Arica 234 Lima, Peru, Director Marine Hospital Callao.

EMPLOYMENT BUREAU

HELP WANTED

Help wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 10th of each month for publication on the 20th. Mail to New York office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in New York City. In replying give age, professional training, salary requirements, previous positions held and three or more references.

United States Civil Service Examinations are announced for bacteriologist, associate bacteriologist, assistant bacteriologist, junior bacteriologist, surgeon's assistant (dental, eye, ear, nose, throat), roentgenologist, associate roentgenologist, assistant roentgenologist, and junior roentgenologist. Applications will be rated as received until March 31, 1922.

Applicants should at once apply for Form 1,312, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C.; the Secretary of the United States Civil Service Board, Customhouse, Boston, Mass.; New York, N. Y.; New Orleans, La.; Honolulu, Hawaii; Post Office, Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, O.; Chicago, Ill., St. Paul, Minn.; Seattle, Wash.; San Francisco, Calif.; Denver, Colo.; Old Customhouse, St. Louis, Mo.; Administration Building, Balboa Heights, Canal Zone, or to the Chairman of the Porto Rican Civil Service Commission, San Juan, P. R.

Wanted: A full-time operator for a dental clinic, conducted by the health department, situated in an industrial city of 40,000 inhabitants. Children mostly in attendance. Salary $1,800.00 to $2,000.00. Apply to Perth Amboy Board of Health, Perth Amboy, New Jersey.

Wanted: Competent physician to take position as full-time county health officer in Middle Western state. Salary for first year, $3,000 and expenses. Address P. T. 476, care of this JOURNAL, New York address.

Wanted: Bacteriologist to apply for city service examination for assistant director of bacteriological laboratory of the City Department of Health of Baltimore, Md. Must have training equivalent to graduation with a degree of A. B. or D. P. H., with degree of M. D. not necessary but preferred. Must have special training in sanitary bacteriology, including a special knowledge of the bacteriology of milk and food products. Salary $2,500 per year. For further particulars apply to Commissioner of Health, 311 Courtland St., Baltimore, Md.

POSITIONS WANTED

Positions wanted announcements will be carried in this column. The charge is $2 per insertion. Copy should be received at this office by the 10th of the month.

Wanted: Position in field of child hygiene. University as well as medical graduate. Long experience in health work; two and one-half years in child hygiene. At present director division of Child Hygiene, State Board of Health. Available within next few months. Address 199, care this JOURNAL, New York address.

Wanted: Bacteriologist and laboratory technician desires position as city bacteriologist, or with association of physicians. Young man, single, college graduate, B. S. in chemistry. Thoroughly trained and experienced in all phases of clinic and public-health laboratory work. At present assistant city bacteriologist of large city. Available April 1. South preferred, but will go anywhere. Salary $200 a month. References. Address A. W. 202, care this JOURNAL, New York address.

BOOKS AND REPORTS REVIEWED

Food Products, Their Source, Chemistry, and Use. *E. H. S. Bailey. Philadelphia: P. Blakiston's Son & Co.*, 1921. *Second Revised Edition, with 92 illustrations. Pp. 529. Price,* $2.50 net.

The first edition of this book appeared in 1914. The present edition is enlarged by some thirty-odd pages, the new material introduced representing the more recent advances in the science of nutrition and in the art of food manufacture. In the new edition there have been added brief discussions of such subjects as vitamines, bread made from mixed flour, and peanut products. Some additional tabular matter has also been added, such as statistical matter on the production of different cereals in the United States, and the composition of proprietary foods. The chapters on animal and vegetable fats and oils, and nuts and cereals have been revised, for it is the trade in these products that the world war has peculiarly affected. The actual additions to the volume are greater than the slight increase in size would indicate for the reason that the treatment of such subjects as the alcoholic beverages has been shortened. A number of new illustrations have also been added.

The book is a very useful discussion, not too technical in character, of the kinds and varieties of foods in use the world over, of the sources from which they are derived, and the manner in which they are prepared. The book is singularly free from serious errors. It presents to the intelligent reader, unequipped with much technical information, a comprehensive and intelligible picture of foods and the food industries. While the book contains a certain amount of information concerning curious foods that are little used in this country, it does furnish the information which any well

educated person might be expected to acquire concerning foods and their production. It is, therefore, to be recommended as a text for courses in colleges and high schools that are designed to teach this subject in an elementary and not too technical manner.

CARL L. ALSBERG, M.D.

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Public Health Surveys: *What They Are; How to Make Them; How to Use Them. Murray P. Horwood, M.S., Ph. D., Instructor, Department of Biology and Public Health, Massachusetts Institute of Technology, with a Foreword by William T. Sedgwick and an Introduction by George C. Whipple. New York: John Wiley & Sons,* 1921, 12 *mo. Pp.* 403. *Flexible leather cover. Price,* $5.00.

Dr. Horwood, already well known to readers of the AMERICAN JOURNAL OF PUBLIC HEALTH, has put all public-health workers in his debt by bringing together, for the first time, in one of Wiley's convenient manuals, information that should be in the hands of every one who attempts to conduct a public-health survey. If, after this book has been read, a few amateur sanitary surveyors are scared off from the complex task, it will have done good work. If, further, it stimulates health officials and prospective health workers to thorough and painstaking preparation, both formal and practical, for survey work, or to a recognition of the outside expert, it will have done a still greater service. For the really experienced health surveyors of the first rank in this country can be counted on the fingers of both hands. This is perhaps not strange when we consider the youth of the movement. The earliest date found in Dr. Horwood's comprehensive bibliography, or in that of the *Cleveland Health and Hospital Survey* (Part 11) for a survey strictly of the general health, is 1911. In the ensuing ten years a considerable literature, a technique, and not a little professional activity (frequently under the auspices of endowed foundations) have grown up. The time is ripe for such a book as this. The author's own experience is adequate, though intensive, the largest city he has surveyed being Oklahoma City, and it is from the urban communities of Oklahoma that he draws most of his material.

The book is elementary, and intentionally so. It is written to reach the widest possible audience. In thus translating into words of one syllable and insuring that no possible point is omitted, the author occasionally falls into the habit of dogmatizing on minor administrative details. It might be well to recognize that there may be more than one satisfactory way of handling these problems in a rapidly developing art. But this fault, if it can be called one, is unimportant in the ensemble.

The method of the manual is briefly to discuss under each main division the desirable conditions, so far as they are generally agreed upon or standardized; to list, under an exhaustive outline, the questions which should be asked by the investigator to secure a cross-section of health conditions; and to give blank forms, tables, score-cards, etc., for recording such facts as may be most conveniently cast in statistical form. Many other aids to the reader who runs are introduced, such as bold-faced side-heads, recapitulatory outlines at the end of chapters, etc., after the fashion of text-books.

The first three chapters are devoted to general material about the survey, the organization of the community, and certain basic methods which have been found useful. Then follow in order chapters devoted to the following topics: The Community, Water Supply, Drainage, Sewerage, and Sewage Disposal, Collection and Disposal of Refuse, Milk Supply, Inspection of Restaurants, Lunch Rooms and Food Stores, Housing, School Sanitation, School Hygiene, Organization and Activities of the Health Department, Hospital Facilities, Tuberculosis, Vital Statistics, Analysis of the City Budget. The remaining chapters tie up the several strands in a consideration of the complete report, recommendations from standard health surveys, methods of putting the survey results to work, and their value to the health campaign in general.

It is impossible in the space at our command to speak critically of the contents of the main chapters. No space is provided for the subject of mental hygiene in a general survey of the public "health." But the pioneer book in this field deserves hearty credit, despite such questions of emphasis. Suffice it to say that the book will soon be an indispensable tool of all professional health experts. K. M. G.

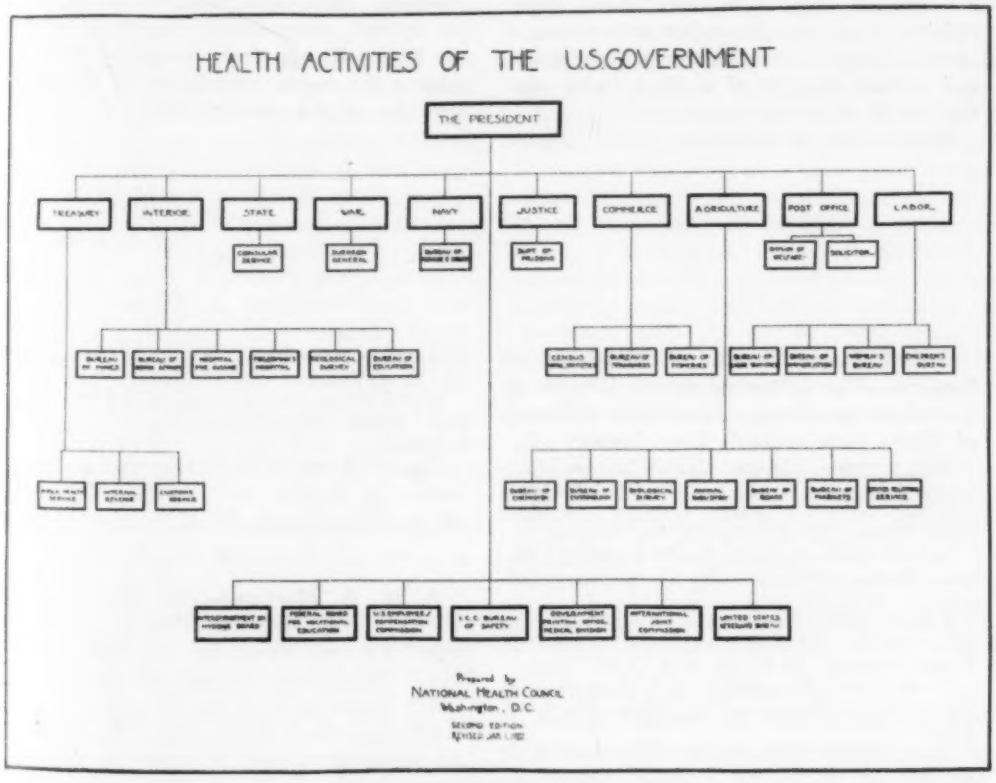
THE HEALTH ACTIVITIES OF THE UNITED STATES GOVERNMENT

IN each of the ten federal departments of the government, there are bureaus which conduct some type of health activity. In all, there are thirty-six divisions of the government which are concerned, directly or indirectly, with some phase of public health. The most prominent health agency of the government is, obviously, the Public Health Service. For some incongruous reason, this bureau is in the Treasury Department. The Public Health Service receives the largest appropriation and has the largest personnel of any of the bureaus interested in health. The seven divisions of this bureau include: scientific research, marine hospitals and relief, domestic quarantine, foreign and insular quarantine, personnel and accounts, sanitary reports and statistics, and venereal diseases. In the Treasury Department also the Bureau of Internal Revenue enforces the anti-narcotic and prohibition laws and the tax on child labor, and coöperates with the Department of Agriculture in enforcing the Food and Drugs Act and meat inspection laws.

Bureaus in the Department of Labor engaged in health effort are the Children's Bureau, the Women's Bureau, which considers the health of women in industry, the Bureau of Labor Statistics, which studies industrial hygiene, and the Bureau of Immigration, charged with the health of immigrants and the exclusion of diseased persons from the country.

In the Department of Commerce is the Division of Vital Statistics of the Bureau of the Census, which conducts the bookkeeping of public health. Also in this department is the Bureau of Standards, which has issued safety standards, and the Bureau of Fisheries.

The Department of the Interior has several bureaus dealing with health. The Bureau of Education, the Bureau of Indian



Affairs, the Bureau of Mines, and the Geological Survey are all interested in the matters of public health.

In the Department of Agriculture the Bureau of Chemistry conducts the analytical work under the Pure Food and Drugs Act, and the Bureau of Animal Industry copes with animal diseases, many of which affect man. The Bureau of Entomology studies insects influencing the health of man and the Bureau of Biological Survey attempts to eradicate the rat and the plague-carrying ground squirrel. The Bureau of Roads has designed sanitary conveniences for farms and the Bureau of Markets inspects food products. The States Relations Service has a corps of home demonstration agents who instruct persons in home economics, sanitation, health, and hygiene.

In order to complete the Cabinet departments there may be mentioned the War and Navy Departments, each of which has a medical division, the Department of Justice, whose superintendent of prisons is responsible for the health of federal prisoners, and the Post Office Department, whose solicitor prosecutes fraudulent advertising of so-called health remedies through the mails, and whose director of welfare looks after the health of postal employees.

Besides the departments under Cabinet officers there are seven independent departments interested in some aspect of health conservation. The Interdepartmental Social Hygiene Board works to diminish the venereal diseases, the United States Veterans' Bureau cares for the mentally and physically disabled ex-soldier, the Federal Board of Vocational Education is engaged in rehabilitation, the Employees' Compensation Commission provides medical and surgical treatment for injured government employees, the Interstate Commerce Commission has a Bureau of Safety, the International Joint Commission endeavors to prevent pollution of our boundary waters, and the Government Printing Office has a medical division.

While it may seem that there is much duplication in the government's health work, this duplication is more apparent than real. The public reached by the various agencies is generally different. Furthermore, there is so much to be done that it would seem that there is room for all these efforts. A certain amount of coördination is, however, essential. It is quite possible that the plans for federal reorganization as developed by the Smoot-Reavis Committee may include a scheme for closer correlation of the health activities of the government.

J. A. T.

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United States Bureau of Mines Issues Reports.—The following named Reports of Investigations of the United States Bureau of Mines have recently been issued:

Serial 2298—Lignite Carbonization—Carbonized Residue Briquets.—By W. W. Odell.

Serial 2299—A Fatal Quarry Accident from Falling Rock.—By Oliver Bowles.

Serial 2300—Underground Loading Devices in Metal Mines.—By C. Lorimer Colburn.

Serial 2301—Destructive Distillation of Mixtures of Oil and Coal.—By Joseph D. Davis, Palmer B. Place, and G. S. Scott.

Serial 2302—Inspection and Assembly of Flame Safety Lamps at the Mine.—By L. C. Ilsley.

Serial 2303—Methane in California Gold Mines.—By Byron O. Pickard and E. D. Gardner.

Serial 2304—The Treatment of Carbon Monoxide Poisoning.—By R. R. Sayers and H. R. O'Brien.

Serial 2305—Recent Articles on Petroleum and Allied Substances.—By E. H. Burroughs.

Copies of any of these reports may be obtained by writing the Director, Bureau of Mines, Washington, D. C.

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A. M. A. Meeting.—The Committee on Hotels of the American Medical Association urges that reservation for the meeting at St. Louis, May 22-26, be made as early as possible. Reservation should be made by communicating direct with hotels. If satisfactory arrangements cannot be made in this way, write to Dr. Louis H. Behrens, 3525 Pine street, St. Louis, Mo.

PUBLIC HEALTH NOTES

Abstracts by D. Greene, M. D., James A. Tobey and Homer N. Calver.

A Committee for the Protection of Animal Experimentation. — For years there have flourished (more or less) in this country, societies devoted to anti-vivisection. Usually these organizations have also been opposed to vaccination, to modern medicine and to sanitary science generally. It is indeed refreshing to learn that there has recently been formed a Committee for the Protection of Animal Experimentation. This Committee has headquarters at 234 Berkeley Street, Boston, and was created late in 1921. It is fostered by a group of naturalists, and two pamphlets which have been issued to date bear the names of the following distinguished persons in this field: Thomas Barbour, John C. Phillips, Ernest Harold Baynes, Edward Wigglesworth.

The first statement of the Committee, dated December 1, 1921, quotes largely from the book on "Animal Experimentation and Medical Progress," by W. Keen, M. D. The second statement, dated January, 1922, outlines some reasons why dogs are necessary in the laboratory and gives excerpts from the organ of the Anti-Vivisection Society, *The Open Door*. In contrast to the insipid material from this banal magazine, it presents letters and statements from many distinguished scientists and civic leaders. The Committee also distributes reprints of the excellent article entitled "The Truth About Vivisection," by Ernest Harold Baynes, which appeared in the *Woman's Home Companion* for July, 1921, and an article entitled, "More About Vivisection," by Ernest Harold Baynes, which appeared in the November, 1921, issue of the *Woman's Home Companion*.

While up to the present the activities of the anti-vivisection group have never attained any particular influence, the propaganda is nevertheless a nuisance. Some people are likely to be influenced from hypersensitiveness to so-called cruelty to animals, and it is most beneficial to have an organization, the aim of which is to give out accurate and fair information concerning a necessary branch of science. Public-health workers in particular will welcome the entry of the Committee for the Protection of Animal Experimentation as an asset in their own field. (J. A. T.)

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Problems of American Malaria Control.— In abstracting an article entitled, "Requirements of the Different Species of Anopheles in Regard to the Abode of Their Larvae," by two Dutch authors, Assistant Surgeon General H. R. Carter tells us that the article brings out facts that (1) the different species of anopheles are not equally efficient in nature as vectors of malaria; (2) they have not the same classes of breeding places. He then deduces that the practical application of these two postulates is to determine if malaria can be sufficiently controlled by the breeding places of certain species only, letting those of other species alone. The article in question concerns malaria in the Dutch East Indies, but Dr. Carter states that the problem has an analogy in the United States. The three principal types of anopheles moquitoes, the *A. punctipennis, the A. quadrimaculatus,* and the *A. crucians,* are not equally efficient as carriers of malaria and they have to a great extent, different classes of breeding places. Dr. Carter states that the problem of *A. punctipennis* is as follows: (1) Is *A. punctipennis* in nature so inefficient a vector that we can afford to confine our malaria campaign to the other two? (2) Are its breeding places so specific that by so doing we will avoid a very considerable amount of work necessary to control the production of this species alone?

Work on this problem was begun in 1915, and Dr. Carter hopes that the men in the field will make and note such observations at present bearing on it, as it is among the most important of the field problems now awaiting solution.—*Public Health Engineering Abstracts*, U. S. P. H. S. Jan. 7, 1922. (J. A. T.)

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Annual Report of the American Red Cross for 1921.—The annual report of the American National Red Cross for the year ended June 1, 1921, outlines among other

things the health work done by that organization. In the foreword, Dr. Livingston Farrand, who served as chairman of the Central Committee, states that the central idea and purpose of the Red Cross peace-time program is one of health protection and health education of individuals, families and communities. Scientific but common sense and practical doctrines of physical well-being are taken by these agencies into the schoolhouse, the home and the community center. The program is flexible, designed for ready and frictionless adaptation to varying conditions in varying communities, coöperative with public-health and other institutional agencies, supplementary where such other agencies exist, preparative for their establishment where they do not exist. In the body of the report it is stated by E. A. Peterson, director of Health Service, that virtually all of the services of the American Red Cross engaged in some form of health work. At the close of the fiscal year, 251 chapters had taken up health center work, as against 126 during the previous year. The Red Cross participated in the support, either wholly or in part, of 402 health centers. First aid is reported by E. R. Hunter as enrolling over 80,000 students during the year. Miss E. G. Fox states under Public Health Nursing that there were 1,267 Red Cross public-health nurses on July 1, 1921. The majority of these nurses were engaged in county-wide work. Under Nutrition Service, Miss Margaret Sawyer states that there were 1,114 nutrition classes conducted with an enrollment of 22,096 children. Much health work is also set forth in the report of foreign operations. Child health units were established in several countries. (J. A. T.)

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United States Naval Medical Bulletin Now a Monthly.—Volume 16 of the *United States Naval Medical Bulletin* is now being issued as a monthly instead of a quarterly as in the past. The magazine contains many articles of interest to public health as well as to medicine and surgery. The *Notes on Preventive Medicine for Medical Officers* has been merged with the *Bulletin* for reasons of economy. The January, 1922, number reproduces the report of the committee of the American Public Health Association on the standardization of regulations for the control of communicable diseases. (J. A. T.)

Public Health in South America.—In the *Bulletin* of the Pan-American Union for January, 1922, there are many items concerning public health, in the news section. An Anti-Cancer League has been formed in Argentina; tuberculosis dispensaries have been equipped in Santiago, Chile, and during last September gave attention to 599 patients; Ecuador opened a day nursery at Guayaquil in October and a society for the protection of children has been started in Ibarra; in Panama, a clinic started in Colon by the Christobal Women's Club is caring for about two thousand cases a month and has handled over five thousand since it began operations in June; Peru has a Society for the Protection of Infancy, and the mayor of Lima has issued orders that milk dealers shall be licensed, the applicants for such licenses being required to show health certificates.

Under the Republic of Central America, we are told there are child-health stations in Guatemala City, while in San Salvador a free milk station and various health centers have been started. There are also venereal clinics and medical consultation offices in the latter state. Vaccination has been urged by the government of the Dominican Republic and by the Salvadorian Department of Sanitation. It is stated that in Venezuela, great interest has been awakened in public sanitation. A complete plan for the sanitation of Caracas was outlined in a recent number of the *Ingenieria Internacionale* and is abstracted in the *Pan-American Bulletin*. Costa Rica reports that twenty-five young women this year took the examinations for sanitary assistants in the schools. (J. A. T.)

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France's New Minister of Hygiene.—"The new Minister of Hygiene, M. Paul Strauss, is a rather moderate Republican who made his debut in politics in the furor of the Nationalist movement in 1900 as a member of the Municipal Council of Paris. A little later he was elected Senator from the Department of the Seine. By profession he is a journalist and is President of the Association of Republican Journalists. For a long time he has discussed questions of public health in the press, particularly in the *Figaro*.—*New York Times*, January 16, 1922. (J. A. T.)

Bureau of Hygiene in Greece.—A reorganization of the Greek Ministry of Public Assistance is being considered, to incorporate into this Ministry, among other things, a bureau of hygiene and a bureau charged with the care and protection of infants and small children. The work of these bureaus, as at present planned, will be largely of a preventive and educational nature. School nursing and a clinic to which mothers may bring their infants for examination and advice have already been established in Greece. These activities which have been in the hands of charitable organizations, the American Red Cross being especially efficient, are now to be taken over by the Ministry of Public Assistance.

School physicians report that one-third of the pupils in the schools are affected with trachoma, and in some schools every child is suffering from this disease. (Official statement from the American Consul, Athens.)—*Weekly News Letter*, U. S. Children's Bureau, January 14 and 21, 1922. (J. A. T.)

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New England City and Town Milk Council.—A New England City and Town Milk Council has been formed to improve the quality of the milk and cream sold in the cities and towns by coöperating in eliminating undesirable conditions. Membership is confined to health department representatives of localities receiving milk and cream from sources outside of their own jurisdiction. The following minimum requirements have been adopted for processing plants, receiving stations and distributing plants:

1. Milk shall not be processed in any room or building which is not provided with tight, smooth walls, floors, and ceilings, to be of such construction as will allow easy and thorough cleaning.
2. Milk plants shall be free from flies and vermin.
3. Water supply shall be sanitary and sufficient.
4. All sewage and waste products shall be cared for in a sanitary manner.
5. Sufficient and convenient toilets and wash bowls shall be provided for employees.
6. Boilers shall be separated from the processing portion of the plant.
7. Equipment shall be of proper construction and shall be installed in a sanitary manner.
8. Shafting, pulleys, cold water piping, or other obstructions shall not be placed over milk processing equipment.
9. Pasteurization shall be efficient. Pasteurizers shall be equipped with automatic recording temperature devices, and charts therefrom shall be preserved and accessible to health officers.
10. Coolers shall be separately inclosed or otherwise protected.
11. Weighing cans, pre-heaters, receiving and holding vats shall be covered.
12. Milk as received from producers shall be clean, and the temperature shall not be above 50 degrees Fahrenheit.—*Monthly Bulletin*, Boston City Health Department, Vol. 10, No. 5, November, 1921, p. 105-7. (J. A. T.)

✚

Sterilization of Throats of Diphtheria Carriers with Ultraviolet Rays.—Over 40 chronic nose and throat diphtheria carriers were treated by ultraviolet radiation with the Kromayer lamp. All parts of the tonsil are exposed directly for from 3 to 5 minutes, so that but one to three applications are necessary to completely cover each tonsil. The rays are applied through a hollow metal tube, one-half inch by six inches long and so slanted to fit directly over the tonsil. In 30 per cent of the cases one treatment was enough to sterilize, while 4 cases required 3 exposures, but none required more than that. If the cultures remained positive the raying was repeated with a 4 to 6 minute exposure.—L. C. Donnelly, *Mich. State Med. Soc. Jour.*, July, 1921, 356; *Amer. Rev. of Tuberculosis*, Dec., 1921, 198. (D. G.)

✚

Housing vs. Food as Factors in Increased Incidence of Tuberculosis.—In order to ascertain whether the marked increase in incidence of pulmonary tuberculosis in Rostock (a city of 70,000 inhabitants) was due to poor housing or to inadequate food conditions following in the wake of the war, 356 clinic cases of active pulmonary tuberculosis were studied. Their living quarters were classified according to the following standards: number of rooms, lighting, air, cleanliness and number of occupants; whether they contained a kitchen and at least one heatable room; and whether the patient alone occupied the bed. The living

quarters of these patients were classed as "good" according to the above-mentioned standards in 66.6 per cent; as "moderately good" in 16 per cent; as "poor" in 16.3 per cent; and as "very poor" in 1.1 per cent. The author does not consider these figures as being sufficiently bad to lay the blame for the increased rate incidence of phthisis upon housing conditions, but by a process of exclusion thinks it due rather to the well known decrease in quantity and quality of food, especially animal proteins, carbohydrates and fats.—W. Tobias, *Ztschr. f. Tuberkul.*, April 20, 1920; *Amer. Rev. of Tuberculosis*, Dec., 1921. (D. G.)

✚

The Swimming Bath and Catarrhal Otitis.—Dr. K. Amersbach, director of the University clinic for diseases of the ear, nose, and throat at Freiburg in Breisgau, remarks that though swimming-bath conjunctivitis was described as long ago as 1899, no connection has hitherto been suspected between this condition and disease of the ear. Recently, however, during an outbreak of swimming-bath conjunctivitis at Freiburg, numerous cases of catarrh of the Eustachian tube were seen at the out-patient department of the clinic. The patients chiefly belonged to a swimming club, and most of them were also suffering from conjunctivitis. The most striking feature about the tubal catarrh was its obstinate character and tendency to relapse. In almost all the cases the ear trouble developed about a fortnight after the onset of the conjunctivitis. The patients complained of a feeling of pressure in the ear, tinnitus of varying degree, autophony, and more or less impairment of hearing.

Dr. Amersbach seems to have been discouraged from making any bacteriological examination by the fact that investigations of the kind undertaken by ophthalmologists on swimming-bath conjunctivitis had been inconclusive. He suggests that the involvement of the Eustachian tubes in swimming-bath tubal catarrh may occur in one of two ways—namely, either by infected lacrymal secretion reaching the tubes as the result of blowing the nose or swallowing, or directly by infection of the pharynx by the bath water. The affection is most frequent in young persons, but older individuals are not immune, as three of the cases were over 36 years of age. Treatment consisted in the application of the usual methods for dealing with catarrh of the Eustachian tubes.—*Deut. Med. Wchnschr.*, Aug. 4, 1921; *Lancet*, Sept. 3, 1921. (D. G.)

✚

Celebration of Centenary of Pasteur.—The one hundredth anniversary of the birth of Pasteur will be celebrated, fittingly, by a great health exposition at Strasbourg, where he began his teaching career, from May to October, 1923. Plans for the big "Exposition Interalliée d'Hygiène" are already well forward. The prime movers of the undertaking are the city and University of Strasbourg and the Pasteur Institute of Paris under whose auspices the exposition is to be arranged and carried on. The list of patrons includes the president of the French Republic, M. Millerand; M. Loubet, president of the administrative council of the Pasteur Institute; M. Poincaré, president of the Society of Friends of the University of Strasbourg and member of the administrative council of the Pasteur Institute; and M. Leredu, Minister of Health and Public Welfare.

Scientific societies all over the world are expected to send representatives to the opening day of the exposition, when a statue of Pasteur is to be unveiled in University Place, Strasbourg, in the presence of the Pasteur family, the famous man's most noted pupil and collaborator, Dr. Emile Roux, director of the Institute, who is honorary president of the Exposition, and many of the leaders in medicine and public-health work in Europe and America.—*Social Hygiene Bulletin*, Dec., 1921. (D. G.)

✚

Tuberculosis Increasing Among Adolescent Girls.—Figures compiled by the Metropolitan Life Insurance Company which relate to the ten year period 1911 to 1920, show that despite the decline in the mortality from tuberculosis which has taken place during the last decade, the disease is actually increasing among girls between the ages of fifteen and twenty years. Adolescent girls constitute the only group in which the tuberculosis death rate has not declined.

The company's compilations, published in the December issue of the *Statistical Bulletin*, show that during the six year period 1911 to 1916, the average annual death-rate from tuberculosis among white girls, aged

fifteen to nineteen years and insured in its Industrial Department, was 144.5 in 100,000; by 1919, this rate had increased slightly (to 145.8), and in 1920 it rose further to 151.5. These increases, it is true, are small; ordinarily, they would not be commented upon. They become very important and significant, however, by virtue of the strong contrast which they present to the trend of tuberculosis mortality among both females and males of other age groups. For example, women from twenty to twenty-four years had an average death-rate from tuberculosis of 238.0 in 100,000 during the six year period 1911 to 1916; by 1919, this had decreased to 228.4; in 1920, there was a further and very substantial drop to 213.8. For insured white women aged twenty-five to thirty-four years a death-rate of 252.2 was recorded for the six year period 1911-1916; by 1919, the figure had declined to 214.3 and in 1920 there was a further drop to 190.5.

During the same time that the tuberculosis death-rate of adolescent white girls was increasing five per cent, the mortality among adolescent white boys was decreasing twenty-five per cent.—*Statistical Bulletin*, Dec., 1921. (D. G.)

✣

Cleveland Sewage Treatment Plan.—Cleveland is one of a half dozen or so of our large cities that have embarked upon a comprehensive plan of main drainage and sewage disposal, the particular occasion being the protection of her water supply and bathing beaches. The article referred to describes in brief the three treatment plants to be installed after a series of investigations begun in 1913 and costing $150,000. The two largest of these, the westerly and easterly plants, which are located on the lake shore, will be constructed first, with capacities of 36 and 92 m.g.d. respectively. Treatment will ultimately be the same, consisting of coarse screens, grit chambers, Imhoff tanks and chlorination. Screenings will be consumed in an incinerator.

The article describes in some detail the somewhat novel grit chamber for the westerly plant. This is designed to secure velocities that will leave less than 15 per cent putrescible matter in the grit, or from one-half to 1 ft. per second. This is accomplished by passing the dry weather flow through a central channel which during storms overflows in succession to several parallel channels on each side. The latter are each provided with bottoms sloping to two grit sumps. The elements of design used for the Imhoff tanks are also given in detail, as well as the methods of construction employed in the construction of this plant, all of which indicate careful design and superintendence by the chief engineer, Department of Public Service, Mr. Robert Hoffman, and the sanitary engineer, Mr. Geo. B. Gascoigne.—*Public Works*, Sept. 3, 1921. (K. A.)

✣

Lights and Shadows of the Activated Sludge Process.—In this paper Mr. Eddy has given a clear and comprehensive review of the essential features of this most modern development of sewage treatment. Complete success in its use depends on so many factors that it is a somewhat complicated problem and yet experience seems to indicate no insuperable difficulty in securing excellent results provided the plant has reasonably good supervision and is well designed and provided, further, that a well considered program for operation is followed.

Mr. Eddy emphasizes the need for efficient activation or regeneration of the sludge by biological agencies, by which organic matter may be oxidized and the floc coagulated, thus permitting high concentration of the sludge—under favorable conditions to 2, or even 3 per cent solids. Air supply is therefore of prime importance. Air is employed both for agitation and activation, the volume required increasing with the strength and the age of the sewage. As but 5 per cent of that used is ordinarily effective there would appear to be possibilities in developing new economies in the process of air supply, possibly by surface agitation as carried out by Mr. Haworth at Sheffield; but the paper deals generally with the method of diffusion in most general use. Overaëration, we are told, should be avoided, as actually detrimental.

Re-aëration of the sludge is considered of doubtful value, but for each plant the seasonal demands for purity of effluent, and the proper retention for the sewage (depending largely in the colloidal content and the temperature) should be carefully considered. Ordinarily tanks should provide for about 6 hours' retention. An excessive capacity, besides increasing plant costs; produces an in-

ferior result through the tendency to septicization.

"Perhaps the darkest spot in the entire process of activated sludge treatment is that of sludge dewatering." Mr. Eddy can speak with authority here from his close association with the exhaustive experiments in this line at Milwaukee. Pressing is practicable but difficult and costly. The centrifuge is a more compact and automatic device but fails to remove much finely-divided matter. "At present the hope of improving the method of dewatering appears to lie in the direction of conditioning the sludge rather than improvement of mechanical appliances." By adequate aëration and the use of sulphuric acid the sludge is freed of its moisture with greater ease and at moderate cost, ordinarily perhaps about $2.70 per mil. gal. of sewage.

If this problem of dewatering activated sludge can be satisfactorily solved the process, combining the advantages of an excellent effluent and an inoffensive sludge rich in nitrogen, would receive a fresh impetus.—Harrison P. Eddy, *Public Works*, Aug. 6 and 13, 1921. (K. A.)

✚

The Physical Examination of Well Persons.—Some points to be emphasized and mistakes to be avoided by lectures at Public Health Institutes have been outlined by Eugene Lyman Fisk, M. D., medical director for the Life Extension Institute.

POINTS TO EMPHASIZE IN A SINGLE LECTURE

1. The aim of this work is remedial, protective and constructive.

2. These ends require that the work be planned as a thorough survey of the family and personal history and the body of the individual.

3. It is important that there be a clear understanding of the general physical state of the population.

4. The general physical state of the population has been disclosed by sickness surveys, examinations in industry, for military service, etc.

5. The statistics available from the above sources show that the average individual is an impaired individual and that the work of any organization attempting the examination of supposedly well people will consist in searching for and recording accurately the impairments which are shown in the average civilized person.

6. It must be recognized that disease, old age and death are due to definite physical causes, as heredity, poisons, food excess, etc. It is the purpose of these examinations to search for these causes and correct them or protect the individual against them.

7. Examinations must be made as thorough and systematic as the conditions under which they are conducted will permit.

8. It is possible with properly trained men to make such a survey in a very practical and valuable form without the aid of specialists. It is wise, however, to have special examination of the eye, ear, nose and throat.

9. Many of the diagnostic tests appropriate for the various regions of the body are simple. The technique and significance of the reactions can be readily acquired by a well-grounded generally trained man. This limits the need for specialists except in borderline and obscure cases.

10. If this work is to be made universally available, the ground work must be done by the generally trained man, as there are not enough highly qualified specialists to satisfy the needs, if they are used as a matter of routine in all cases.

11. With all the data in hand available from the family and personal record of the individual and the physical survey and laboratory reports, the results should be interpreted by some one trained in this special work. A program should be outlined that will involve the correction of remediable defects, supervision and mitigation of nonremediable defects, and instruction in hygiene for the upbuilding of the body.

12. It is all-important that individuals be classified as to their mortality and morbidity plane and counselled as to moving on to higher planes. Adequate prepared literature must be furnished in connection with these examinations, in addition to verbal or written counsel.

MISTAKES TO AVOID

1. The examinations must not be conducted from the ordinary clinical standpoint of merely seeking to diagnose a disease.

2. Loose terminology, vague and indefinite methods of technique must be avoided. The examination must be conducted with accuracy, extending the scope of the diag-

nostic methods in borderline and obscure cases.

3. The message based on these examinations must always be a hopeful one. The individual must be informed that practically every civilized individual shows impairment and that recognition of these impairments points the way to improved health.

4. Do not over-emphasize any particular form of defect or fault in hygiene. Every defect and fault in hygiene should be presented in proper balance.

✣

Water Softening and Purification at Columbus.—Columbus, Ohio, is one of the comparatively few cities that soften their water supplies, and probably the only one that uses phosphoric acid in connection with it. The city obtains its water supply from Scioto River, which is dammed about five miles above Columbus. This water is very hard, is very muddy at times, and receives sewage pollution, also.

In 1904 the typhoid death-rate was 139 per 100,000. In 1905 work on the filtration plant was started. By filtration the number of bacteria was greatly reduced and the typhoid death-rate for 1920 was 2.5 per 100,000. Turbidity was kept continuously at zero.

For softening the water, lime and soda ash are used, with alum as a coagulant. The normal carbonates present in the lime-softened water form incrustations on the sand grains on the filters. Owing to this incrustation, the sand had increased in effective size from 0.42 mm. to more than 1.0 mm.

Experiments and investigations were made toward working out a practical method of eliminating these difficulties. One method suggested for producing a lime-softened water that was stable was to carbonate the water with CO_2. A number of ways of doing this were tried but proved unsatisfactory. By carbonating the water the normal carbonates were put in solution and there was no reduction in hardness. Experiments were conducted to determine the advisability of neutralizing the normal carbonates with sulphuric acid, with silicic acid, boric acid, oxalic acid, tartaric acid and phosphoric acid. The final conclusion arrived at was that, as a finishing treatment for lime-softened water, phosphoric acid was the best and most economical treatment tried. By the process used, half of the carbonates are removed, thus reducing the hardness of the water; the balance of the carbonates are carbonated, thus producing a water that is stable.

In coagulating muddy water, better results are obtained with coagulants when the water is treated with enough lime to soften it and an additional amount is added, sufficient to give the water a caustic alkalinity. This caustic alkalinity must be neutralized before the water is filtered and phosphoric acid can be used for this purpose also.—*Public Works*, August 13, 1921.

✣

Soil and Water Pollution.—The question of the area over which dangerous pollution may spread from some focal point, as a pit, or open privy, or broken sewer, is an important one from the viewpoint of health. Its importance grows with the increasing density of population.

In determining the danger area, two factors must be considered—surface pollution and sub-surface pollution. At first glance the former may seem to lack the importance of the latter, but it is safe to say that a large part of the disease caused by bad wells and springs is due to surface pollution. However, it must not be concluded that underground travel of pathogenic bacteria is the exception to the rule. Experiments have shown that dangerous pollution often travels for considerable distances with underground waters.

During the past few years research has been carried on by several bodies with the purpose of determining the limit of travel of pollution from privies, septic tanks and sewers. A thorough investigation was recently concluded by Dr. Israel J. Kligler of the Rockefeller Institute. The report of this work has been summarized by the Alabama State Board of Health. To quote in part:

"The following facts were established:

"1. The typhoid and dysentery bacilli succumb rapidly on exposure to an unnatural environment.

"2. The spread of pollution from a focal point is limited in scope.

"3. Pollution in wells is usually surface in origin.

"The main conclusion arrived at on the basis of both the experimental and field observation was that in moderately compact

clay and sand-clay, or sandy soil, free from cracks, the possibility of sub-soil pollution of the ground water is negligible, provided the ground water level is more than ten feet below the polluted area."

The writer agrees with this conclusion, but adds the qualifying statement that the ten feet of soil below the polluted area is a safeguard only if there is no excess of water to carry the bacteria rapidly through the soil.

It seems clear that the type of soil and the depth of the water table are highly important factors in determining the pollution area. It seems, also, that the borderline cases of high water table and unfavorable soil conditions should be considered dangerous, and that types of sewage disposal liable to pollute the ground water should be avoided as much as possible. In the matter of water supplies, shallow wells drawing from ground waters exposed to such pollution should also be avoided, or, at least, kept under close scrutiny.—W. A. Hardenbergh, *Public Works*, December 31, 1921.

✣

Public Health Work in the Philippines.—The Rockefeller Foundation announces that the International Health Board has accepted an invitation to coöperate in carrying out the general scheme of reorganization of the public-health activities of the Philippine Islands, which was recently made public by the president of the Senate, Manuel Queson.

The participation of the Board will consist in lending the services of certain members of its staff for a limited period and providing specialists as consultants and assistants to Philippine government officials in various lines of public-health work. The broad program which the government has adopted for improving health conditions includes the ultimate consolidation of all health functions in a single department of health to correspond with the ministry of health in other countries.

Among the persons whose services will be furnished by the Rockefeller Foundation is an assistant to the dean of the College of Medicine and Surgery of the University of the Philippines, who will assist in developing the medical school and will give particular attention to the problem of providing post-graduate instruction in public health, so that the health workers so urgently needed in the Philippine Islands may be trained locally.

Fellowships for advanced study in the United States will be offered by the Board to exceptionally promising and well-qualified young Filipinos, to fit them for the more important administrative and technical positions in the public-health service and for positions as instructors in the College of Medicine and Surgery and as teachers of nursing. Existing facilities for the training of nurses are said to be inadequate to meet the demand for hospital and private service. The nursing situation will therefore be studied and special attention given to training women in public-health nursing.

An assistant will be provided for the director of the Bureau of Science, who will be expected to advise in the further development of that bureau. The biological laboratory, which is one department of the Bureau of Science, is to be expanded in order to serve as the central public-health laboratory of the Philippines, with local laboratories in the provinces.

Dr. Victor G. Heiser, director for the East of the International Health Board, and formerly director of health for the Philippine Islands, went to Manila in February to assist in carrying out the program.—*Science*, January 6, 1922, Vol. lv, No. 1410.

✣

Determining and Treating Carbon Monoxide Poisoning.—In order to make accurate observations for determining and treating carbon monoxide poisoning among those employed in mines, metallurgical plants, and tunnels, a number of investigations are being conducted at the Pittsburgh Experiment Station of the United States Bureau of Mines.

Methods of collecting and preserving blood from persons affected or overcome by carbon monoxide have been investigated and developed.

The following methods of analysis of blood in the presence of carbon monoxide have been studied by Bureau of Mines investigators: Haldane's picrocarmin method, tannic acid method, spectrophotometric method, and the Van Slyke gasometric method. The Haldane picrocarmin method proved to be the least desirable, being very inaccurate with low concentrations; the tannic acid method was accurate but tedious; the spectrophotometric method was accurate and

rapid, but required expensive apparatus; the Van Slyke method was the most dependable, but it required a comparatively large sample, 2 to 4 c.c., for each determination.

A study of the feasibility of using in first-aid work a mixture of carbon dioxide and oxygen, for resuscitation of persons overcome by carbon monoxide, was conducted on both dogs and men. Results indicated that in its present state of development the method is not feasible for use by first-aid men.

In the conduct of the above investigations a superior method for the selection of analysts for color work in chemistry was developed, which, it is believed, can be applied to advantage in any laboratory requiring careful colorimetric determinations.

Also the solubility of carbon monoxide in serum and plasma was determined, the amount of carbon monoxide dissolved in the serum proving to have little effect upon the accuracy of colorimetric determinations. The figures for the solubility of carbon monoxide in serum have also a purely scientific value in the calculation of carbon dioxide in serum and the determination of the hydrogen in concentration.

In addition to these studies on carbon monoxide, work has been done on the problem of the elimination of carbon monoxide from the blood after a dangerous degree of asphyxia. It has been determined that ventilation of the lungs could be increased from 300 to 400 per cent by adding 6 to 10 per cent of carbon dioxide to pure oxygen. These investigations have also shown that the effects of carbon monoxide upon the heart are not specific, but are secondary to general asphyxia and a terminal failure of respiration.

LEGISLATION—FEDERAL

From the bi-weekly report of the National Health Council, December 20, 1921-January 16, 1922.

PROGRESS ON MATTERS PREVIOUSLY CONSIDERED

A. 1. The United States Public Health Service. (a) New bill for reorganization. (b) Civilian status for reserve officers.

a. H. R. 9775. Introduced by Mr. Newton, January 6, 1922. Referred to the Committee on Interstate and Foreign Commerce. This is the second bill to reorganize and promote the efficiency of the U. S. Public Health Service, the other (H. R. 9291) having been outlined in Statements No. 13, p. 5, and No. 17, p. 5 (A. J. P. H., December, 1921; February 1922). This bill, like the other, would transfer not to exceed 550 officers of the reserve corps, including 50 dental surgeons and 50 scientists other than medical officers, to the regular corps. It expressly states that officers shall be entitled to promotions, retirement privileges, and the same pay, allowances, and increases as officers of corresponding grade in the Army Medical Department. No officer shall be transferred to the regular service in any grade above assistant surgeon unless he has had a total of three years' satisfactory service in the Army, Navy, Marine Corps, Coast Guard, Coast and Geodetic Survey or Public Health Service, part of which must have been between April 6, 1917, and November 11, 1918. Promotions shall be by examination. Seven professors of the hygienic laboratory are provided by the bill, but they are to be appointed by the President with the consent of the Senate and are exempt from the provisions of the bill. No corps of nurses, dietitians or reconstruction aids are provided in this bill, as they are in the Dyer bill (H. R. 9291).

b. Civilian status for reserve officers.

Since much agitation has recently been caused by a rumor that the pay of reserve officers of the Public Health Service was to be reduced, we will give an outline of this situation, although no legislation directly to this effect has been introduced. While government officials are reticent in giving out information about this matter and refer to it as "confidential," the facts are, nevertheless, as follows:

Some time ago the United States Bureau of Efficiency made a recommendation that, in the interests of economy, all reserve officers of the Public Health Service be placed on a civilian basis. The effect of such a procedure, if consummated, would have been to cut off commutation privileges and cause a diminution in compensation of such officers. The matter was laid before the Assistant Secretary of the Treasury, who has charge of the Public Health Service. It was also referred to General Sawyer, president of the Board of Hospitalization. No final action had been taken, but reserve officers

and others, having learned of the recommendation, began to oppose it. Telegrams from all over the country poured into the White House and messages of protest were received by the thousands by members of Congress. They came not only from Public Health Service officers, but from disabled soldiers in hospitals, voluntary health agencies, and from members of the medical profession in private practice. The outcome of this general protest resulted in an announcement from the White House that the recommendation would not be adopted and that the reserve corps of the U. S. Public Health Service would be held intact. Surgeon General Cumming of the U. S. Public Health Service opposed the proposed change on the ground that it would demoralize the commissioned personnel of the service and would make it impossible to continue the present care and treatment of disabled soldiers.

On January 7, 1922, Senator Smoot, a member of the Committee on Reorganization of the Departments of the Government, declared that he was strongly in favor of the recommendation of the Efficiency Bureau to change the reserve officers of the U. S. Public Health Service to a civilian status. He stated that the transfer of these reserve officers to a civilian status would have no effect in reducing their pay, their allowances or their commutation of quarters. Neither would it take them out of the present hospitals where they are treating former service men. The only effect, Senator Smoot declared, was to take away from them the retirement privileges which they now hold and to which they are not entitled. He said that although they were reserve officers they now enjoy the same retirement privileges as regular army and naval officers, having been given these privileges by an executive order without legislation by Congress. Senator Smoot blamed the U. S. Public Health Service for obtaining this "illegal" retirement privilege for its reserve officers (and also nurses) and charged that the Service was attempting to "loot the Treasury."

H. R. 9724. Treasury Appropriation Bill for 1922-23. Introduced by Representative Madden, January 4, 1922. Passed the House of Representatives, January 5, 1922. Referred to the Committee on Finance in the Senate. Without a record vote, the Appropriation Bill for the Treasury Department passed the House of Representatives on January 5, 1922, after it had been introduced in that body the day before by Chairman Madden of the Appropriations Committee. This is the first bill prepared under the new budget system. The measure carried several large appropriations of interest to public health, consisting of the funds necessary for the operation of the U. S. Public Health Service, maintenance of quarantine stations, prevention of epidemics, and hospital construction. A summary of these follows:

a. Office of Surgeon General	$ 92,970
b. Pay, etc., of commissioned medical officers	913,560
c. Pay of acting assistant surgeons	300,000
d. Pay of other employees	840,000
e. Freight, transportation and traveling expenses	50,000
f. Maintenance of hygienic laboratory	45,000
g. For medical examinations, surgical, medical and hospital services for the beneficiaries of the U. S. Public Health Service, other than patients of the U. S. Veterans' Bureau, including all other expenses incident thereto	5,627,394
h. For operation of quarantine service	739,000
i. Prevention of epidemics	400,000
j. Field investigations of diseases and conditions influencing their propagation and spread.	300,000
k. Interstate quarantine service	25,000
l. Rural sanitation	50,000
m. Biologic products and regulation of sale of all serums, viruses, toxins, etc	50,000
n. Maintenance and expense of Division of Venereal Diseases, of which sum $225,000 shall be allotted to various states for coöperative work	400,000
Total for Public Health Service	$9,832,924

Hospital Construction

a. For repair work at Public Health Hospital No. 60, Oteen, North Carolina	$100,000
b. For miscellaneous repair work, Public Health Hospital No. 42, at Perrysville, Md.	150,000
c. For painting and plumbing at Public Health Hospital No. 44, West Roxbury, Mass.	50,000
d. For remodeling and repairs at Public Health Hospital No. 24, Palo Alto, California	50,000

Quarantine Stations

a. For water tank on tower and watering system at Port Townsend, Washington, Quarantine Stations in addition to $14,000 already appropriated..... 25,000

There is no appropriation in this bill for continuing the Interdepartmental Social Hygiene Board.

H. R. 8928. Government Salary Reclassification; Nurses and Inspectors. This measure, known as the Lehlback Bill, is now before the Senate Committee on Civil Service, having passed the House on December 15, 1921. In Statement No. 17, page 7 (A. J. P. H., January), we discussed the bill in general, outlining the eight groups into which all civilian employees of the government would be placed, and analyzed the various grades under the professional group, which embraced most of the persons engaged in public-health work.

Nurses are not included in the professional group in the bill, but are placed in the institutional service group. This service is stated to include "all classes of positions the duties of which are to perform or supervise nonprofessional work incident to the care, treatment, and well-being of inmates of hospitals, charitable, correctional or other government institutions." Seven grades are set forth. The first includes all those who receive instruction and do routine nursing work prerequisite to qualifying as registered nurses. Annual rates of compensation are $180, $240, and $300 with maintenance. The second grade includes those who move patients, clean rooms, scrub floors, and act as hospital orderlies. The third includes assistants in routine nursing and housekeeping. The fourth is general supervision over a group of patients or employees of the lower grades. Grade five comprises the graduate nurses and those in charge of housekeeping. Compensation is $900, $960, and $1020 with maintenance and $1320, $1380, $1440, or $1500 without maintenance. The sixth grade includes supervisors with salaries from $1080 to $1200 with maintenance, and $1620 to $1860 without. Finally, grade seven is the superintendent or director of nurses, who would receive from $1740 to $2100 with maintenance, and from $2580 to $2940 without such maintenance.

Since nurses are classed in the bill with charwomen and housekeepers, an effort is being made by representatives of the nursing associations to have the bill amended so as to give the nurses a professional status.

The inspectional service in the bill has six grades, which includes under grade two those who inspect sanitary conditions where food is prepared or sold, collection of refuse, and general sanitary inspection. Salaries range from $1500 to $1680 per annum in this grade. Grade three, in which salaries are from $1800 to $2040, also includes sanitary inspectors similar to grade two, but of greater skill and with more responsibility. Inspectors in the interests of accident prevention are added to this grade. Grade four embraces those who direct the District of Columbia regulations relating to sanitation, and those who direct or assist in enforcing regulations regarding contagious diseases or vital statistics. Here, salaries are from $2200 to $2940. Grade five seems to have no specific provisions relating to public-health workers, nor does grade six or grade one.

NEW LEGISLATION

(MATTERS NOT PREVIOUSLY CONSIDERED)

H. R. 5680. Free Postal Privileges for Literature of State Health Departments. Introduced by Mr. Clark, May 3, 1921. Referred to the Committee on Post Office and Post Roads. In checking up the health bills before Congress we recently came across this one, which has been inadvertently omitted from any of our previous reports. As far as we know, this is the only bill relating to public health that we have missed since last April.

This measure would make it lawful to transmit through the mail, free of postage, any printed letters, circulars, documents, pamphlets, and literature relating to public health which shall be issued by any state or territorial board of health. Such material must bear the words "Public health business" and the name of the board of health. The unlawful use of such franking privilege would be punished according to existing postal laws.

No action has as yet been taken on this bill.

H. Res. 258; H. Res. 259. Investigation of Narcotic Addiction in the United States. Introduced by Representative Volk, January 4, 1922. Referred to the Committee on Rules. The first resolution provides for the appointment of a select committee of fifteen

members of the House, including all physicians who are members of that body, for the purpose of investigating into the subject of drug addiction in the country, the method of handling these unfortunates, the treatment practiced by private physicians, institutions and sanitariums, the effectiveness of the present laws and regulations to control trafficking in narcotic drugs, and for the purpose of drafting new legislation. The preamble of this resolution alleges:

1. Competent medical and administrative authorities estimate that between one million and two million persons are victims of narcotic drug addiction.
2. This condition has been complicated and aggravated by enforcement of the Harrison narcotic law by the federal government and by many of the rulings and regulations, and also by variation in state laws.
3. Many of the rulings of the federal government, states and municipal laws are contrary to existing medical bibliography, clinical and pathological research in handling addict patients, and dangerous results have befallen victims.
4. These rules and regulations and state laws have made it impossible for the medical profession to treat narcotic drug addicts without fear of arrest, indictment or prosecution by the criminal authorities.
5. These facts have caused an increase in smuggling, peddling and illegal distribution of drugs and also have brought about a virtual monopoly in the treatment of narcotic addict patients by privately owned sanitaria promoting certain routine formulas and cures without regard to the individual physical phenomena.

The second resolution authorizes the Secretary of the Treasury to transmit to the House of Representatives the facts in his possession with reference to the rules and regulations for the treatment of narcotic drug addiction permissible under the Harrison law, as recently issued by R. A. Haynes, prohibition commissioner. The resolution questions the right of the federal government to place a curb on the medical profession in its treatment of drug addicts by these regulations, and questions the ability of the prohibition commissioner to direct medication, as well as the qualification of his agents and inspectors to pass on the judgment or opinion of private practitioners of the medical profession.

The resolution also asks the Treasury Department for information regarding the allegation that narcotic addicts have been denied the advice and the right to undergo treatment by their family physicians under the rules and regulations. The names of the person or persons writing various sections of these rules and regulations governing the treatment of addicts and issued by Prohibition Commissioner Haynes, are asked for by the terms of the resolution. The authority for the publication of a resolution quoted from the Council on Health and Public Instruction of the American Medical Association, fixing thirty days as the length of time which shall not be exceeded in treating drug addiction, is also asked for, and the status of that resolution in the main body of the American Medical Association is requested.

H. J. Res. 247. International Conference to Control Pollution of Harbors. Introduced by Congressman Hicks of New York, January 3, 1922. Referred to the Committee on Foreign Affairs. This resolution authorizes and requests the President to call an international conference of maritime nations to consider entering into an agreement to control the pollution of navigable streams of the world. Such pollution is now increased by oil-burning and oil-carrying vessels through the dumping into the ocean of oil waste, fuel oil, oil sludge, oil slop, tar residue and other water ballast impregnated with oil.

HISTORY OF A BILL IN CONGRESS

In order that persons interested in national health legislation may be familiar with Congressional procedure with regard to bills introduced, we are including this outline of the history of a bill.

In General

Congress is established by Article I of the Federal Constitution and its powers enumerated therein. While the framers of our government intended that the Senate should represent the states and the House of Representatives the people, they gave to each branch equal powers of legislation. No bill can become a law without the assent of both the House and the Senate. Bills may originate in either branch, except that measures for raising revenue must have origin in the House. Frequently, identical bills are introduced simultaneously in both houses. Sometimes a bill is suggested or drafted by a citizen and given to a member of Congress to present. Any member may introduce a bill in his own name. Both houses have legislative drafting services which attempt to set forth bills in accepted legislative phraseology.

In the Senate

The Senate consists of ninety-six members, two from each state. A senator who desires to introduce a bill must rise, be recognized by the Vice-President, who presides over the Senate, and announce that he wishes to introduce a bill. It is then deposited beside the Vice-President's desk, later read by a clerk and referred to the proper committee. There are thirty-four committees of the Senate. The bill is considered by the committee, which holds public hearings. The committee may then do one of four things: (1) Report the bill favorably as it stands, (2) report it favorably with amendments, (3) report it unfavorably, (4) take no action at all. The number of bills introduced in Congress is legion. In the Special Session of the Sixty-Seventh Congress from April to November, 1921, comprising about six months of actual work, approximately 13,000 bills and resolutions were introduced in both branches. Only 108 of these became laws. Many of them never got out of committee. Usually this means that the bill has no chance of passage, but once in a while a motion is made that a committee be discharged from consideration of the bill, with the result that the bill is brought directly before the Senate.

When a bill is reported, it then goes upon the calendar. Under certain conditions, as where a bill is of especial importance, it may be called up out of order, but this is rare. When the measure does come up, it is open to debate. There is no time limit in the Senate. Amendments may be offered on the floor. After debate, the amendments and then the bill are voted on by calling for the ayes and nays, or by *viva voce* vote. If it passes, it is sent to the House for concurrence.

In the House

There are 435 members of the House of Representatives. The procedure in dealing with bills originally brought up in the House is, in general, similar to that of the Senate. There are a few differences, however. The member introducing the bill simply drops it in a basket beside the Speaker's desk. It is referred to one of the sixty House committees, and goes through the same course as in the Senate. There are three calendars in the House, the union calendar, relating to revenue, appropriations, and public property; the House calendar, carrying other public bills; and the private calendar, consisting of private bills. When the bill comes up, the House forms the Committee of the Whole House. Time for debate is limited. Amendments may be offered from the floor. The amendments and the bill are finally voted on by *viva voce* vote, rising vote, taking the vote by tellers, or recording the ayes and nays, according to the demand of the House. If the bill is passed, it goes to the Senate for concurrence.

Bills Passed by One Branch Before the Other

When a bill which has already passed one branch of Congress is laid before the other, it may be passed as it is, amended and passed, left in committee or rejected. If passed, it goes to the President. If amended, it goes back to the original branch for concurrence in the amendments. This may be done at once. If there is disagreement, each chamber appoints three members to form a conference committee to meet and settle the differences. The report is laid before each house, which may adopt it or disagree. Conferences are again held and this process is continued until both Senate and House have agreed on the measure. It then goes to the President, as an enrolled bill.

Before the President

The President has ten days, exclusive of Sundays and holidays, in which to take action. If he signs the bill, or fails to sign it within that period, the bill becomes a law and is known as an Act. The Act is sent to the Secretary of State to be numbered and filed as the original copy of the law. He, in turn, forwards copy to the public printer to be printed for public use. The President may veto the bill, in which case it goes back to Congress with a written statement of his objections. Congress may, however, pass the bill over his veto by a two-thirds majority in each branch.

From the foregoing description it will be seen that a bill introduced in Congress has a long and hazardous career before it becomes a law. The general laws of the United States have been collected in one volume of 1262 pages, which it is proposed that Congress issue in codified form. A bill to this effect (H. R. 12) has passed the House but not the Senate.

LEGISLATION—STATE

With this issue, the JOURNAL begins the publication of abstracts of current state health legislation, which are being collected and published in bi-weekly *Bulletins* by the U. S. Public Health Service with the coöperation of the National Health Council. These *Bulletins* represent the first systematic attempt in the history of public health to issue in collected form, abstracts of current state health legislation. Further information about this service can be obtained from the National Health Council, 411 Eighteenth St., Washington, D. C.

The abstracts are necessarily very brief. Persons interested in seeing complete copies of the bills mentioned are referred to the Secretaries of State in the respective states.

General

The States and the Maternity Act. The U. S. Children's Bureau has announced that five state legislatures have accepted the provisions of the act for the promotion of the welfare and hygiene of maternity and infancy. They are: Delaware, Minnesota, New Hampshire, New Mexico, and Oregon. In addition the governors of twenty states have accepted the act pending the meeting of the legislature. They are: Alabama, Arizona, Arkansas, Colorado, Connecticut, Idaho, Iowa, Kansas, Michigan, Missouri, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, Utah, Vermont, Virginia, Wisconsin, and Wyoming.

Kentucky

Senate No. 36. Regulating Practice of Medicine and Systems of Healing. After a preamble concerning economic conditions and the art of healing, this bill provides that county clerks keep a "Medical and Drugless Practice Register," and that it shall be unlawful to practice medicine, osteopathy, optometry, chiropractic or other systems without so registering. The state board of health would be given power to examine and certify the practitioners. Three courses of nine months each in a reputable college of any of the systems of practice is required to be eligible for the examinations, which would be similar but adapted to the school of healing represented. Boards of examiners would be appointed by the state board of health. The bill also provides for licenses for itinerant practitioners and vendors of nostrums. It is stated that nothing in it applies to the practice of Christian Science, dentistry, or to registered nurses.

House No. 94. Practice of Medicine. Authorizes the state board of health to issue a certificate to practice medicine to any reputable citizen who passes a satisfactory examination before it. Admittance to such examination to any person who has attended a reputable medical college for three years.

Senate No. 37. Vital Statistics. Amends law. Provides that county health officers shall appoint local registrars of vital statistics and defines their duties. The bill also provides that the state board of health shall have printed every five years bound volumes of an alphabetical list of all births and deaths reported with complete data. The state board of health would be required to furnish suitable blanks to registrars. Physicians, midwives, or undertakers would be required to furnish information upon demand.

Senate No. 39. Pollution of Water Supplies. The bill authorizes the state board of health to supervise and control watersheds, streams and ponds, to prevent pollution; and to issue rules and regulations for this purpose. It provides also that the board may order municipalities and others to take measures to prevent pollution, after adequate hearings. Appeals would be decided by a board of sanitary engineers.

Massachusetts

House No. 101. Medical Inspection in the Public Schools. Amends law. Requires examination of children returning to school without certificate from board of health after absence due to infectious or contagious disease. Suspicious cases in school referred to school nurse or physician.

House No. 181. Accepting provisions of the Act of Congress relative to the promotion of the welfare and hygiene of maternity and infancy, and providing for coöperation with the federal government.

House No. 495. Vaccination of Certain Children in Private Schools. Exclusion for Disease. Amends law. Requires vaccination of minors under fourteen for admittance to public or private schools, except on physician's certificate that physical condition would be endangered. Excludes from schools minors under fourteen who are members of household where there is infectious or contagious disease.

Mississippi

House No. 187. Physical Examination of Food Handlers. Requires cooks, waitresses, dishwashers, or any others who aid in preparing foods in hotels, restaurants, or cafes to have within ten days of taking employment a physical examination to be given free by state board of health. Owners would be required to furnish names of all employees to state board of health.

New Jersey

Senate No. 14. Adulteration of Ice Cream. Supplements pure food act by prohibiting adulteration of ice cream with chemicals.

Assembly No. 4. Purity of Condensed Milk. Supplements pure food act by prohibiting manufacture or sale of milk products blended with any fats or oils other than milk fats.

New York

("S. I." is Senate, "A. I." is Assembly Bills)

1. Children:

(a) S. I. 85; A. I. 21; also A. I. 55 and A. I. 62. To protect the health and welfare of women and minor workers by establishing a state minimum wage commission and providing for the determination of living wages for women and minors.

(b) A. I. 20. Amends the labor law in relation to hours of labor for minors and children by reducing the number of hours a day from nine to eight.

(c) A. I. 24; also A. I. 281. Amends general municipal law, so that awards of child welfare boards may be paid to guardians.

(d) A. I. 58. Provides for a state and local (county or city) board of mothers' welfare. The latter, among other duties, shall visit families to note health, care and education of the child.

(e) (See also 6d below.)

2. Foods and Drugs:

(a) S. I. 121. Amends public-health law by adding section granting pharmacist license to licensed druggists in practice since 1910.

(b) S. I. 167; A. I. 269. Amends agricultural law prohibiting sale of milk products blended with fats or oils other than milk fats.

(c) A. I. 19. Amends farm and markets law by establishing a bureau of milk regulation, having supervision over all milk producers and dealers and the quality and purity of their supplies.

(d) A. I. 181. Amends public-health law by giving commissioner of health the power to license hotels and restaurants selling non-intoxicating beverages.

3. Housing:

(a) S. I. 25; A. I. 186. Amends general city law and labor law, authorizes cities to create housing boards, and creates a state advisory housing board.

4. Industrial Hygiene:

(a) S. I. 12; A. I. 75. Amends labor law by creating a bureau of inspection, the scope of which includes industrial hygiene.

(b) A. I. 30. Amends workmen's compensation law in relation to occupational diseases.

(c) A. I. 236. Amends labor law by establishing a state industrial safety museum. Appropriates $25,000 for it.

5. Mental Hygiene:

(a) A. I. 61 (Concur. Resol.). Changes law to include a state commission or commissioner on mental hygiene, which shall visit all institutions for all types of mental defectives.

(b) A. I. 139. Amends law providing for hospital for veterans suffering from mental diseases by making it a state hospital for all persons suffering from mental diseases.

(c) (See also 8a below.)

6. Municipal Health:

(a) S. I. 47. Legalizes bonds for filtration plant at North Tonawanda.

(b) S. I. 53. Among other things, changes term "board of health" to department of public health and gives more discretion to health officer of the city of Amsterdam.

(c) S. I. 81; A. I. 39. Amends Greater New York charter in relation to declaration of imminent peril from pestilence.

(d) A. I. 295. Amends Greater New York charter by providing vacations for children certified to board of education by a physician as requiring same.

(e) A. I. 307. Amends act providing for departments of public health in second and third class cities by providing that health commissioner shall not be removed except for inefficiency, neglect of duty or misconduct, upon written charges, after an opportunity of being publicly heard in his defense.

(f) A. I. 311. Amends public-health law in relation to violation of rules of local board of health by allowing local board to prescribe that wilful violation of its orders shall

be a misdemeanor punishable by fine not exceeding $50, or imprisonment not exceeding six months.

(g) S. I. 193. Creates water district to be known as Sherrill-Kenwood, comprised of present city of Sherrill and part of city of Oneida.

7. School Hygiene:

(a) A. I. 177. Amends education law by broadening provisions for medical services in the schools.

(b) A. I. 200. Amends education law by providing (among other things) for sanitary care and fumigation of text books used by more than one pupil.

8. State Government:

(a) A. I. 6. Provides for 21 departments of the civil government, including 12 health, and 13 mental hygiene.

(b) A. I. 73. Amends law regarding state departments and institutions. Similar to 8a. Changes state lunacy commission to commission on mental hygiene.

(c) A. I. 13. Provides for a state budget system.

9. Women:

(a) S. I. 86; A. I. 1. Amends labor law by creating a bureau of women in industry.

(b) S. I. 176 A. I. 64 Amends public-health law in relation to examination and treatment of female patients by physicians.

(c) See also 1 a, 1 b, and 1 d above.)

10. Workmen's Compensation:

(a) S. I. 7; A. I. 103. Relates to insurance carriers.

(b) S. I. 71; A. I. 29. Amends workmen's compensation law in relation to direct settlements between insurance carriers and injured workmen and their dependents.

(c) S. I. 72; A. I. 85. Amends law by extending periods over which payments shall be made for permanent partial disabilities. A. I. 2 is also on this subject.

(d) A. I. 3; A. I. 74. Amends law by reducing time before compensation begins.

11. Miscellaneous:

(a) A. I. 56. Bureau of old age pension established by amendment to labor law.

(b) S. I. 184. Practice of optometry regulated by amendment to public-health law.

(c) A. I. 296. Barbers to be licensed by a state board of examiners. Board to set standards. An amendment to public-health law.

Virginia

Merger of Medical Colleges. A bill is now before the legislature which would establish the Medical Department of the University of Virginia, including schools of Pharmacy and Dentistry at the City of Richmond, upon the unconditional transfer of the property of the Medical College of Virginia.

STATE HEALTH NOTES—GENERAL

California

¶ YOU CANNOT STOP **CONTAGIOUS DISEASE** WITH A **LAW,** A **HEALTH OFFICER** AND A **PLACARD.**

¶ YOU MUST GET CO-OPERATION OF THE PEOPLE BY **EDUCATION,** BY **PERSUASION** AND BY **ORGANIZATION.**

From the Cover of the October, 1921, California State Board of Health Monthly Bulletin.

Florida

Several changes in the operation of the cancer clinic by the State Board of Health have been announced by Dr. R. C. Turck, state health officer. The clinic, which was organized several months ago as a radium clinic for the treatment of inoperable cancer in either women or men which could be benefited by the radium treatment, now will employ either X-rays, electricity or radium. The Board states that it is often of advantage to combine two or more forms of treatment in some cases, and all of the Board patients in future will have the benefit of this.

The Board has appointed a staff of physicians to examine and treat all cases. Dr. G. R. Holden, who has been doing the work alone will continue as director of the clinic, and will be in charge of the radium work. Dr. L. W. Cunningham, of Jacksonville, will assist in the department of X-ray treatment, and Dr. J. Lee Kirby-Smith of Jacksonville, in the department of skin cancer. The Board states

that no member of the clinic staff receives payment for service rendered, each devoting his time and services to treatment of the cases free of charge.

Since the announcement a few weeks ago that the Board was ready to accept any form of cancer in indigent patients who would be benefited by radium treatment it has received many applications for admission to the clinic.

Illinois

Since 1906 the individual cost of making diagnostic examinations of specimens in the laboratories of the State Department of Health, has decreased more than 81 per cent. In other words, the average cost of each test made in 1906 was $1.23 whereas the average cost for each test made during the six months' period that ended December 3, 1921, was only $.23. The decrease in the average cost per examination is explained largely by the correspondingly rapid increase in the number of examinations made. In 1906 there was a total of 2,370 specimens examined at a total cost of $2,939.00 as compared with 54,002 for the six months ended December 31, 1921, at a cost of $12,865.00.

A rather significant index into the growing dependence of physicians on laboratory tests as aids to diagnoses is found in the ever-increasing volume of work done at the State Department of Public Health Laboratories. Since the opening of schools in the fall of 1921 the monthly average number of tests made in the main laboratory at Springfield has been greater than the annual average was up to three years ago. In December, 1921, there was a total of 12,449 examinations made as compared with 12,003 for the entire fiscal year of 1919.

The total number of tests made at the State Laboratories during the fiscal year of 1921 was 52,008 or more than four times greater than the total number for 1919.

Indiana.

A public-health survey of Lafayette, a city of 22,486 population (1920), and of Tippecanoe County, in which it is situated, was conducted during the summer of 1921 by Dr. Murray P. Horwood, of the Massachusetts Institute of Technology, under the auspices of the Tippecanoe County Tuberculosis Association, whose objectives are not confined to tuberculosis control, but include the whole field of public health. The cost of the survey was met from funds raised during the 1920 Christmas Seal sale, and the Association has announced its purpose to make Tippecanoe County the healthiest community in the world in five years.

The results of the survey are being published in a series of pamphlets, each covering one of the chapter headings of Dr. Horwood's recent book on Public Health Surveys (reviewed in this issue). Chapters I and IV, devoted to Water and Milk Supply, respectively, have been received.

Considerable pollution was found in the Columbian Park Reservoir, in which the city's chief water supply is stored, and the recommendations include chlorination and stricter laboratory and police supervision of the public and private supplies. The city officials have already acted on some of the recommendations.

The milk supply was found in a still more unsanitary condition, and the surveyor made recommendations for a stringent milk ordinance to be applied to the entire county, and for a full-time trained milk inspector to administer the provisions recommended. Conditions at the dairy and creamery of Purdue University (located in West Lafayette), while superior to most of the commercial milk distributors, were not ideal, the milks sold there not being pasteurized. It was recommended that the University dairy be made a model plant for the county, and coöperate with a reorganized health department in a campaign of education to make the dairy farmers conscious of their responsibility for the milk supply.

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Dr. John Ferrell, of the International Health Board, sent Dr. George P. Paul to this state to secure three counties to promise to employ all-time health officers provided the International Health Board would contribute toward the work. Dr. Paul proved exceedingly active and effective and succeeded in inducing the citizens of Delaware, Fulton and Gibson counties to meet all the conditions according to a new law that county health commissioners would give their entire time to the work. The documents have all been signed by the different counties, and now competent men are being sought who will accept the salary, fixed at no less than $3,000, and take hold of the work in these counties. Dr. Paul is giving his entire time to finding these three men.

Maine

George H. Coombs, M. D., director of the Division of Social Hygiene of the State Department of Health, has been doing excellent work in some of the lumber camps of the state, especially among those of the Great Northern Paper Company. He has been showing his motion-picture films, using the stereopticon, and giving lectures on social hygiene. The Great Northern Paper Company has been showing excellent coöperation in helping Dr. Coombs get this information to its employees.

Massachusetts

The following is an extract taken from an address of Governor Channing H. Cox to the Legislature of Massachusetts:

The commonwealth has recognized its responsibility for the care and treatment of those suffering from mental diseases and defect, and in the state hospital system has provided facilities for the treatment of these cases. In most instances, however, only those patients receive treatment who have well established and serious mental symptoms.

It is an accepted fact that approximately one-half of all patients admitted to our state institutions are suffering from mental disorders that could have been prevented. Our efforts must be continued to overcome a hesitation to use our state hospitals,—a hesitation due in part to ignorance and in part to the continuing effect of old tradition. Every effort must be made to bring treatment to bear upon the early stages of mental disorder, through a continued campaign of education and in trying to promote the best possible conditions in childhood for those who are handicapped either by mental defect or by nervous instability which may later lead to nervous and mental disorders. The commonwealth has recognized the importance of a practical mental-hygiene program, and has provided much legislation to make effective such a program.

The state's program for the feeble-minded embraces the following factors: identification, registration, education, supervision and segregation.

The establishment of school clinics, whereby school children three or more years backward are examined, represents an extraordinary achievement, there being no known similar provision anywhere else in the world. These clinics have been made constructive from the start, the purpose of the examination being not to discredit the backward child in any way, but rather to ascertain exactly what school progress he is making, to insure that he is not worked beyond his capacity, and that not too much is expected of him, and so far as possible to ascertain any special reasons for his lack of development.

The continuing census of the feeble-minded which the Department of Mental Diseases has under way, has far-reaching possibilities; the regular checking up of the lists will show those defectives who are not capable of community life and also those of the hereditary grade, who are likely to propagate their kind and who need institutional segregation. It will also show the well-developed defectives, who are conducting themselves properly and who can safely be trusted in the community. our schools for the feeble-minded living in the community under slight supervision, practically all behaving themselves and the majority supporting themselves.

The state hospital system conducts well-organized out-patient clinics. This work should be continued and encouraged. A practical program in mental hygiene looks forward to coöperating with the courts in the examination of any one where there is the least suspicion of mental disease or mental defect. This should be encouraged, to the end that all courts having to do with juvenile delinquency could be furnished with a psychiatric report.

The Psychopathic Hospital provides a unit of the general hospital type for the reception of early cases of mental disorder. There is a very noticeable tendency for individuals to make use of such small units who are unwilling otherwise to use the state hospital. To take advantage of this principle there is legislation available for the organization of small psychopathic hospital units.

Massachusetts has gone far in providing care and treatment of the insane and mentally defective. The work is being well done today and large appropriations are necessary for its continuance. The only escape from constantly increasing expense lies in the adoption of more preventive measures. I urge the continuance of the support given last year to a program of prevention to offset the growing and increasing demands for institutions to care for those whose mental disorders could have been prevented, and to the development of all means to care for the individual, especially the feeble-minded, in the community

under supervision, rather than the more expensive plan of establishing new hospital facilities.

Michigan

Announcement is made by the Michigan Department of Health, Lansing, Michigan, of the publication of three numbers of its reprint series which may be obtained by readers of the JOURNAL upon request. The series includes: "Comparative Studies of Diphtheria Cultures of Loeffler's Medium, with the Original Swabs Transported by Mail," by C. C. Young and Minna Crooks; "The Wassermann Test and Its Interpretation," by R. L. Kahn; and "Review of the Hillsdale, Mich., Typhoid Fever Epidemic of 1920," by R. M. Olin.

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Typhoid fever, "index to sanitation," decreased in its death-rate to 7.4 per 100,000 population during 1921. The rate in 1920 was 8.0. Two hundred and eighty-four persons died of the disease last year, compared to 297 in 1920.

"Though six other important communicable disease decreased in 1921," says Dr. R. M. Olin, commissioner of health, "sanitarians are generally more elated with a slight cut in the typhoid rate than in any other disease. A low typhoid fever death-rate is the index to efficient sanitation and a high level of intelligence in a community; prevalence of the disease indicates a prevalence of filth and ignorance."

Eight Michigan cities—Cheboygan, Escanaba, Holland, Ludington, Marquette, Muskegon Heights, St. Joseph and Wyandotte—completed the year with zero typhoid rates. None of these cities reported a single death. They represent an aggregate population of 85,714. Detroit reported 55 deaths from typhoid, giving the city a death rate of 5.1 per 100,000. Grand Rapids reported six deaths, equivalent to a rate of 4.2.

Missouri

A recommendation that it repeat its free examinations of crippled children once each year was adopted recently for presentation to the St. Louis Medical Society by the Society's Committee on Public Information and Instruction. The Committee conducted such examinations on three days during January, at which time 269 children, whose parents could not afford placing them under treatment, appeared. The entire number were assigned by the Committee to clinics through which they will pass to hospitals, if hospital treatment is necessary to correct or improve their deformities. It is the opinion of the Committee that the Medical Society will adopt its recommendation. These examinations would give the committee complete knowledge of all the crippled children, and it believes would result in a brightened horizon for many hundreds of shut-ins. Regular examinations, the Committee points out, also would put it in the possession of facts that could be used to better the understanding of the public of Missouri of its responsibility to provide for the education and care of these children, beyond the surgical relief of their physical disabilities.

Furthermore, the Committee believes that, although it made every effort to spread the news of its offer as widely as possible, many children, particularly in the country districts, were not brought in during the examinations, and that these should be reached through a renewal of the offer at some future time.

The Committee was assisted in its assignment of the 269 children regularly examined by several physicians who served during the examinations. Thirty-five per cent of the children were sent to the orthopedic clinic of Washington University, 35 per cent to the St. Louis University clinic, and 10 per cent each to the Missouri Baptist Sanitarium, the City Hospital and Mullanphy Hospitals, where regular orthopedic clinics are maintained or will be established.

The neurological and nutritional clinics of these institutions also will be available for treatment of the children. All the charges commonly incidental to attendance at these clinics have been suspended.

Many of the children will require braces, some so extensive as to be quite expensive. The fund available for use in making braces for the children of parents who cannot pay is limited, and the demands upon it at this time are expected to be heavy. The Committee desires it known that it may find it necessary to apply in some cases to the Provident Association or some other agency of the Community Council, the Red Cross and to individuals inclined to contribute to the purchase of braces.

New Mexico

Last year, nearly eight thousand specimens were examined and reported upon in the public-health laboratory at the University of New Mexico, Albuquerque, more than double that done the year before. In fact, more cultures of diphtheria alone were examined in 1921 than the total of all specimens that came to the laboratory in 1920. During the coming year it is expected that the volume of examinations will be greatly increased, for there are eight counties in the state which have employed full-time health officers. Fortunately, four of these health officers have laboratories for their counties, but there are many special tests that can be done only at the state laboratory.

New York

In spite of the gratifying and widespread progress in recent years in controlling typhoid fever, the New York State Department of Public Health is still called upon to investigate an occasional local outbreak. During the two weeks ending October 13, 1921, 53 cases occurred in Gouverneur and the surrounding communities in that part of St. Lawrence County. In every instance the patients had drunk water from a well on the premises where the first case had developed and this was the only possible mode of infection common to all the cases. The well was immediately closed and on examination gave confirmatory evidence of extreme pollution. Fifty-six feet distant from the well was the family privy and 68 feet away was a creek which received the sewage from neighboring houses. This creek rose during a downpour in August until its waters came up to the wall beside the well. This explosive outbreak again shows how imperative it is that a public water supply shall be both safe and acceptable. The Gouverneur public water supply is well chlorinated and bacterially safe but because of industrial wastes it is at times objectionable in color, odor and taste. On the other hand the water of this well was pleasing to the senses but subject to pollution from several sources. As a result 58 persons, some from out of town and distant counties, motor tourists and hotel guests, turned away from safe but repellent water to the sparkling spring—and imbibed typhoid fever.

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Activities for the promotion of public health have steadily grown until they now reach the remote districts. The State Health Department has grown in the 41 years of its existence until it has a staff of 356 employed in its ten divisions. These divisions, each under the supervision of a director, are: administration, sanitation, laboratories, communicable diseases, vital statistics, public-health education, child hygiene, public-health nursing, tuberculosis, and venereal diseases. The work of these divisions is closely coördinated, and their activities are carried on in close coöperation with local health boards and officials.

Among the important features of the department's work is that of the division of sanitation, the main effort of which is devoted to the supervision of the sanitary quality of some 550 public water supplies of the state which serve more than eight million persons. In the past fifteen years an average of 2,000 lives per year have been saved from typhoid fever alone.

Modern methods for the prevention of disease, as well as for its diagnosis and treatment, are to a large extent based upon the results of laboratory examinations. The state laboratory service is highly developed and most efficient and extensive. From a service in 1913 limited to the examination of only three kinds of specimens, with a total of 13,000 examinations, last year the diagnostic laboratories alone made over 200,000 examinations. However, this service is not yet complete, and physicians on some of the rural districts are greatly handicapped by the lack of laboratory service close at hand. Twenty-one of the 62 counties of the state now have an established laboratory service, compared with 8 that had the service in 1913.—F. D. Beagle, *State Service Magazine*, January-February, 1922.

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For years public-health agencies have been preaching to the farmer the necessity of modern sanitation as the first essential in securing healthful and comfortable living conditions in the rural home.

Seeing the importance of this instruction as a health measure the New York State Health Department suggested the desirability of imparting this information by means of a "movie"—and through the generosity of the Atlantic Division of the American Red Cross such a film has now been made available to both health and farm agencies. The film is entirely free from any advertising matter and its technical accuracy is guaranteed by the fact that the entire demonstration was planned,

staged and acted by the staff of the Division of Rural Engineering of the New York State College of Agriculture. The making of the film was supervised by the New York State Department of Health and the photography is of the highest order.

The film shows the installing of a complete plumbing system in a farm home. First a kitchen sink is erected and a pump installed; then follows the supplying of running water from a tank, after which hot water connections are made to the water front of the kitchen stove and running hot and cold water secured in the kitchen. The film then goes on to show how easily a modern bath room is added, lavatory, bath tub, and water closet being put in and connected and proper waste drainage arranged and by diagrammatic drawings the principles of septic tanks are shown. Each step is carefully shown in full detail by "close-ups". The methods of cutting and threading pipe, its connections, the use of check valves, unions and so forth and the cutting and connecting of soil pipe are shown in detail. This picture should accomplish the two-fold purpose of showing the farmer how easy and simple the work is and how it may be done step by step and added to as means permit, and of really teaching him the detailed technique of each process. The film should be of the utmost value especially in the fields of public-health education, agriculture extension and farm bureau work.

The film measures 2,040 feet and is in two reels. Price $200 a copy.

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In the view of the State Health Department, a convincing case has not yet been made out for the use of vaccines for the prevention of pneumonia. At the time of the last influenza epidemic, a thorough investigation of the efficacy of these vaccines was made, both by experiments upon animals, and by careful observation and analysis of the results of this method as used among 19,000 inmates of state institutions. This investigation indicated that little or no protection against pneumonia was afforded by the use of the vaccines.

Ohio

The "Babies' Special," directed by the Babies' Dispensary and Hospital of Cleveland, has done rural child welfare work in Cuyahoga County for the past two summers. A well-equipped babies' dispensary was housed on a one-and-a-half-ton truck and put in charge of a doctor and a nurse. The findings of the past summer confirm the findings of the summer of 1920, part of which were:

The prevalent idea that the fresh air and wholesome living conditions in the country insure healthy childhood, and that the congestion, dirt, impure air, and increased exposure to disease in the city must be responsible for unhealthy children, cannot be accepted without reservations.

Malnutrition, both primary nutritional and secondary post-infectious, was very prevalent. The large number of cases of defective mouth hygiene emphasized the need of rural dental clinics. Rickets occurred more frequently than the so-called "wholesome living conditions" of the rural districts might call for. Tuberculosis and contagious diseases were less frequent than in city districts. Paradoxical as it may seem, many of the mothers showed that it was quite difficult to obtain fresh, clean cow's milk suitable for baby feeding.—J. E. McClelland, M. D., *Mother and Child*, January, 1922, Vol. 3, No. 1.

Ontario

The Junior Red Cross, with more than a hundred auxiliaries organized in the schools throughout the province, and an enrollment of several thousand school children, has already earned for itself a place of distinct value to society. It is endorsed and recommended by the Minister of Education, the chief inspector and chief school medical officer, and cannot be considered merely a fad.

The Junior Red Cross is a link that connects the schools with the great social movements. It provides for children, training in junior citizenship, and organizes them for self-controlled participation in civic affairs, such as hospitals, sanitoria, orphanages, shelters, etc.

The money collected by the auxiliaries is used for whatever charities the auxiliary votes to support. The children are particularly interested in work for crippled or incurable children and many donations have been made for buying braces, crutches, spinal jackets, etc., for less fortunate brothers and sisters. Blind children are not forgotten, nor are homeless children and orphans.

It is gratifying to note that the Junior Red Cross has not limited its contributions to Canadian children alone. Belgian, French, Serbian and Russian children have all been remembered, as have some of the small Chinese famine sufferers.

Pennsylvania

The annual meeting and conference of the Pennsylvania Tuberculosis Society, held at Harrisburg, January 24, 25 and 26, marked the thirtieth anniversary of the founding of the Society, the first organization of its kind in America. From the standpoint of interest and the value of the addresses and discussions, it was one of the most successful ever held by the Society.

Some of the subjects discussed were: An Adequate Tuberculosis Program, Health Education in Pennsylvania Schools, Future Possibilities of the Modern Health Crusade, The Place of Nutrition Clinics in Tuberculosis Prevention, the United Fight Against Tuberculosis and Tuberculosis in Industry.

Health dramatics and demonstrations had an important part in the conference.

The Society adopted the following resolution: RESOLVED, that the members of the Pennsylvania Tuberculosis Society, assembled in annual meeting in Harrisburg, January 25, 1922, hereby recommend to the National Tuberculosis Association that arrangements be made whereby the International Union on Tuberculosis shall be invited to meet in Philadelphia during the Sesquicentennial Celebration in 1926, also that arrangements be made whereby the annual meeting of the National Tuberculosis Association in 1926 shall be held in the same place, and be it further RESOLVED, that copies of this resolution shall be forwarded to the National Tuberculosis Association, the chairman of the Sesquicentennial Celebration, and to the mayor of Philadelphia.

The report of Arthur M. Dewees, executive secretary, stated: "Two outstanding items of interest and causes for satisfaction are the lowered tuberculosis death-rate in the state and the steps taken to more effectively combat the disease through the providing of county tuberculosis hospitals."

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Virginia

The following paragraphs, extracted from Governor E. Lee Trinkles' recent inaugural address, augur well for public-health work in Virginia during his term:

"I feel that I should express to you my very strong interest in work for the conservation of health and prevention of disease. In proportion as people are well and strong, we may expect them to be happy, productive, and progressive.

"No tax upon the people is so oppressive and so unjustifiable as the tax that is levied by preventable disease. We now know how most of the serious diseases are carried, and we know how to prevent their transmission. It is our bounden duty to utilize this knowledge.

"Disclosures of examining boards, here and abroad, during the war were shocking to all right-thinking people. No one had imagined that such a large percentage of young men in our country and in other countries were unfit for military service. It is no justification for us to say that Virginia was not notably deficient—that our trouble was the trouble of all.

"We cannot erase that record, but we can prevent its repetition. Health is, by and large, a purchasable commodity. We are not able to guarantee additional years to any one individual, but we are able, if we afford a sufficiency of prevention, to guarantee a longer average life to the people of a community or a state.

"As a concrete illustration, the record of the State Board of Health in reducing the number of typhoid cases from more than 14,000 in 1909 to less than 3,000 in 1920, and the number of deaths from more than 1,400 in the former years to 267 in the latter, is surely sufficiently illuminating. What has been done with typhoid and the other filth-borne diseases has measureably been done with other groups; and we may expect great results from the newly-instituted coöperative efforts of the health and school authorities with the children of Virginia.

"In connection with health matters we cannot overlook the serious scarcity of doctors in our rural sections and, unfortunately, this is a condition which may not be expected to rapidly improve. It is, therefore, incumbent on our fellow citizens in the country to guard themselves. Wherever possible there should be active health organizations in counties, and I feel it a duty to urge upon all the people to heed the advice and obey the regulations of the State Board of Health.

"So far as our finances will permit we should be liberal in our appropriations for public health. This is a sound, economic principle. Weak and sickly people cannot compete with strong and healthy ones. We should be willing to make economies in other lines rather than ignore this health work which, humanity and charity aside, offers to a state the most certain and largest dividends for the amounts invested."

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Contagion in Industrial Establishments.—It is quite a common practice for the larger establishments to have a doctor or nurse, or both, to look after the health of the employees, a wise provision which should be universally adopted.

This is not the place to more than mention the importance of fresh air, ventilation and safety devices. Safe water for drinking purposes should be distributed so that employees can reach it without too much loss of time. No common drinking cups should be tolerated. Sufficient toilet facilities, preferably with split seats, should be provided. If hot and cold water are supplied they should be piped so that both are delivered through a common spout. The common cake of soap should be replaced by a liquid soap. The hands should be dried on paper towels or on individual hand towels.

Ideally all employees should be examined for infectious diseases before entering upon their duties. This recommendation is aimed particularly against tuberculosis and venereal disease. Such a procedure is hardly practicable, although something may be done along this line. It is hard to exclude tuberculosis subjects; yet it should be done if the case is an open one, and the time is not far distant when the employees themselves will insist upon it. Less compunction need be exercised in excluding those infected with venereal disease.

An employee sick with an infectious disease should be excluded until he is well or until the physician feels it safe for him to return. It is of much value to have the nurse visit the homes of employees who are out more than two or three days, to ascertain whether the employee is sick, and the nature of the illness.

When an infectious disease does develop, the factory doctor should inspect daily those in most intimate contact with the sick person, that he may be able to exclude any others who are infected at the earliest possible moment.

Cooks, waiters, bakers, and those who dispense drinks, should be licensed and examined at least twice a year, and a license card issued for a six months period, this examination to be done by the health department with painstaking care. Each applicant should be stripped to the waist, so that the chest, abdomen and skin may be examined, as well as the eyes, mouth, throat, etc. The men should be examined for venereal disease routinely, and the women if there is a suspicion. It has been found that this examination, if courteously and well done, and particularly if the physician points out any physical defects which need remedial measures, will not be objectionable. They will appreciate that they are getting a little free medical advice which may be of much importance to them.—D. L. Richardson, M.D., *The Nation's Health*, Vol. IV, No. 1. January, 1922.

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Accidents in Coal Mines.—Accidents at coal mines in the United States in 1921 resulted in a smaller loss of life than in any year since 1903, according to a report just compiled by the Federal Bureau of Mines. Information received from all state mine inspectors shows a total of 1,973 men killed, as compared with 2,271 in the preceding year, a reduction of 298 fatalities, or more than 13 per cent.

The decrease was due largely to the fact that the bituminous mines were idle much of the year on account of the depressed condition of industry in general and the resulting lack of demand for coal. The output for the year is estimated by the U. S. Geological Survey at 494,500,000 net tons, of which 407,000,000 tons was bituminous coal and 87,500,000 tons was anthracite, the total production representing a decrease of more than 23 per cent below the tonnage mined in 1920. For every million tons of coal produced, the fatality rate for the past year was 3.99, while for 1920 it was 3.52. Paradoxical as it may seem, it is believed that the idleness of the mines during much of the year, while resulting in fewer lives being lost, nevertheless was partly responsible for

the increased accident ratio on the basis of production. Underground operations tend to become more hazardous during periods of idleness, because of increased likelihood of roof falls, gas accumulations, etc., as well as a lessening of the morale of the workmen, resulting in more frequent accidents when the men return to work.

Most of the fatalities were, as usual, due to falls of roof and side, and haulage accidents. The year was remarkably free from large disasters, there being but five accidents killing five or more men each, resulting in a total of 34 deaths. These deaths constituted but 1.7 per cent of the year's total of 1,973 fatalities, a lower record than for any year during the past decade.

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Accident Prevention from a Medical Viewpoint.—It is to be emphasized that a fairly extensive experience in the practice of industrial medicine indicates safety work to be one of the basic needs of industry. The safety campaigns of the past ten or fifteen years have been a great success in that they have materially reduced the number of serious accidents with benefit to the employees and the employers, the value of which cannot be figured in money. Complete safety work is composed of two parts, one as indispensable as the other: (1) A more extended use of mechanical safety devices; and (2) a recognition of the importance of the human element before and after the accident, without which mechanical protection can only prevent a small number of accidents.—W. H. Lipman, M.D., *The Nation's Health*, Vol. IV, No. 1. January, 1922.

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Gas-Masks Ineffective During Oxygen Deficiency.—Since its army mask investigations ceased at the close of the war the Bureau of Mines has carried on intensive investigations which have resulted in a mask which will allow the wearer to enter smoke and fumes given off in the open air or in large open buildings. When this mask has been made commercially it will undoubtedly be of great value in the protection of men who work where such gases are likely to be encountered, and to firemen in fire-fighting in and around buildings. But it must be borne in mind that when there is oxygen deficiency, which may occur in mines after explosions or fires, in confined spaces, in surface fires, in basements or closed rooms or where illuminating gas or gasoline vapor may be present in high concentration, as in tanks, gas conduits, or possibly sewers, or in the unventilated holds of ships, then only self-contained breathing apparatus, otherwise termed oxygen breathing apparatus, can be safely used.

When it is desired to enter a confined space, such as a gas tank or a sewer where the presence of gases or deficiency of oxygen is suspected and self-contained breathing apparatus is not at hand, analyses or tests should first be made to determine the nature of the gas and that the percentage of oxygen present is adequate for breathing —that is, at least 17 per cent. Unless at least that amount of oxygen be present the place should not be entered, even with a mask which has absorbents for concentrated poisonous gases.

In a mine in which an explosion has occurred or a fire is raging, granting that there may be sufficient oxygen where air is being circulated, there is usually, nevertheless, in the local atmosphere on the return side of a mine fire or in the inner workings of a mine where the explosion has destroyed stoppings, a deficiency of oxygen accompanying high concentrations of carbon monoxide and carbon dioxide. Moreover, it can never be foretold how rapidly the atmosphere may change at a particular place in the mine where recovery operations or fire-fighting is being carried on, which would make it dangerous or fatal to the wearer of a mask. Insufficiency of oxygen gives no warning. A man wearing a gas mask in such workings, while crossing a fall of roof, or when at the face of an unventilated rise or dip heading, or in similar situation, may drop without warning upon encountering an atmosphere deficient in oxygen owing to a accumulation of fire damp or black damp supplanting the breathable air.

The Bureau of Mines, therefore, recommends on the basis of present evidence that only self-contained oxygen breathing apparatus should be used in mines following explosions or fires. There are always men willing to risk their lives to save others who would be tempted to use masks if they were on hand and the risk is larger than should be taken.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by ARTHUR LEDERER, M. D.

Bacteriology of Pneumonia in Children.—The author has studied the bacteriology of 98 cases of lobar pneumonia, 52 cases of bronchopneumonia and 15 cases of post-pneumonic empyema, all in patients 12 years of age or younger. In lobar pneumonia or empyema following, pneumococcus type I has been found in 29.9 per cent; pneumococcus type II in 3 per cent; pneumococcus type III in 7.1 per cent, and pneumococci of group IV in 37.7 per cent. The general reliability of these figures is suggested by the reasonably close correspondence to the findings in a parallel series of cases in adults. It is further suggested that the etiology of lobar pneumonia in infants and children follows in a general way that in adults for a given community at a given time. Studies of comparative mortality suggest that the child possesses a better natural immunity against pneumococcus, type for type, than does the average adult. In bronchopneumonia, the fixed types of pneumococcus are much less common than in lobar pneumonia. Common mouth forms are much more common. Regardless of type, the general mortality for bronchopneumonia is much greater than for lobar pneumonia. This is probably due to the conditions of origin and circumstances surrounding the former disease. *Streptoccoccus hemolyticus* and *Staphylococcus aureus* have been common in bronchopneumonia and have been followed by a particularly high mortality. There has been an extraordinary tendency to the development of empyema in infections with pneumococcus type I. Nearly 38 per cent of pneumonias charged to this type developed this complication. Numerically it outranks any other cause of empyema in this series by about six times. This phenomenon bears no relation to the administration of serum.—A. B. Lyon, *Amer. Jour. Diseases of Children*, January, 1922, 72. *(D. G.)*

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Formaldehyde Test for Syphilis.—The value of this test lies in its simplicity. Blood is drawn in the usual manner as for a Wassermann test. At the end of twenty-four hours the serum is decanted from the test tube into another clean but not sterilized test tube; a drop of ordinary commercial liquor formaldehyde is added, and the tube plugged with cotton wool. The serum and formaldehyde are allowed to remain at ordinary room temperature for twenty-four hours. At the end of this period observation is made as to the condition of the serum. Coagulated serum is a positive result; fluid serum is a negative result. The author endorses the method as being of value.—C. Suffern, *Lancet*, (London) 2, 1107, (1921); *Jour. A. M. A.*, 77, 2150, (1921).

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Positive Wassermann Reaction in Typhus.—The author reports the results he secured from the application of the Wassermann test to fifty serums of typhus patients in whom there was no clinical evidence of syphilitic infection. During the fever period, forty-six serums (92 per cent) gave a positive Wassermann reaction. From his observation the author reaches the conclusion that the Wassermann test in typhus fever, applied to inactivated serum, is almost always positive, if the blood sample is taken before the crisis. He recommends in doubtful cases, if the Weil-Felix test is not feasible, and a differential diagnosis (for example, as between typhus and typhoid fever) is desired, that a positive Wassermann reaction be interpreted as pointing to typhus fever, since in many control cases of typhoid and paratyphoid, solely negative results were secured. What the mechanism of the positive reaction is, he is unable to state, but suggests that possibly Wassermann's recent investigations may throw light on the subject. The author makes no attempt to explain the repeatedly reported negative Wassermann reactions of other investigators, as he has no detailed information in regard to the technic they employed.—K. Bauer, *Muench. med. Wochenschrift*, 68, 1251 (1921); *Jour. A. M. A.*, 77, 2153 (1921).

Cause of Sedimentation of Blood Corpuscles.—The rate of sedimentation of blood corpuscles in pregnant blood is far greater than that of normal blood, and the rate increases as the months of pregnancy increase. The authors assert that there are two causes for it. (1) The ratio of blood plasma to corpuscles in blood of pregnant woman is greater than that of normal woman. (2) The corpuscles are more easily agglutinated in pregnant blood than in normal blood. The causative agent of agglutination of the corpuscles in pregnant blood does not exist outside of colloidal substances. The total amount of colloid has no influence, but the following facts have clearly been established: (a) Fibrinogen markedly increases the rate. (b) Globulin increases the rate. (c) Albumin decreases the rate. In pregnant blood these three colloidal substances are so changed as to increase the rate of sedimentation. Besides the specific gravity and viscosity of pregnant blood are lower than those of normal blood, which may have some influence on the rate of sedimentation. The concentration of hydrogen-ion of the serum of the pregnant woman is higher than the normal serum and may somewhat inhibit the rate of sedimentation.—T. Sakae and T. Tsutsumi, *Japan Medical World*, 1, 1, (1921); *Jour. A. M. A.*, 78, 149, (1922).

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Micromethod to Determine Specific Gravity of Urine.—Only 1 or 0.5 c.c. of urine is required for the test. Chloroform and benzin are mixed, the latter slightly in excess, and then a drop of urine is dropped into the mixture. If the drop rises, the proportions are correct. If it falls, more chloroform is added until the urine rises when it is dropped into the fluid. With the mixture thus obtained as a basis, further tests are made with fresh specimens, adding benzin until a mixture is reached in which the drop of urine settles rapidly to the bottom. The specific gravity of the mixture, in which this occurs, is recorded, as is also the specific gravity of the mixture with excess of chloroform in which the drop of urine rapidly rises. The average of the two figures gives the specific gravity of the urine. A table of the findings with this and other methods shows that it is accurate enough for all practical purposes.—C. Noeggerath and H. S. Reichle, *Arch. Kinderheilkunde*, 70, 161, (1921); *Jour. A. M. A.*, 78, 154 (1922).

The Urine Reaction in the Tuberculous.—The author insists that the own urine reaction is the work of the salts in the urine, and that it may occur in both the healthy and the tuberculous. There may be antigens in tuberculous urine, but they are not strong enough to give a differential reaction unless the urine has previously had the salts removed.—K. Levi, *Med. Klinik*, (Berlin) 17, 1296, (1921); *Jour. A. M. A.*, 78, 155, (1922).

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Streptothrix as Cause of Gastric and Duodenal Ulcer.—A broth culture of a streptothrix of the species actinomyces, obtained from a case of acholuric jaundice, was injected intraperitoneally into a monkey. The animal preserved its condition and kept up its weight for seven months, after which it quickly failed, and was killed thirty-two weeks after the first injection. During the period of observation the animal was more apathetic than the controls, and for the last four months sat crouched in one corner of the cage. At the necropsy it was found that an inflammation of the spleen with thrombophlebitis gave rise to infective emboli, evident in their effects in the stomach, producing ulcers and hemorrhage, in the liver and lungs producing hemorrhagic lesions; that in splenic anemia, and more rarely in acholuric jaundice, the gastric hemorrhage may be due in a proportion of cases to septic embolism and consequent inflammation of the branches of the vasa brevia.—A. G. Gibson, *Brit. Med. Jour.*, (London) 2, 933, (1921); *Jour. A. M. A.*, 78, 70, (1922)

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Cultivation of Tubercle Bacilli.—The human tubercle bacillus grows equally well on culture tubes containing slants of glycerol agar or egg medium (Petroff's) regardless of whether the tubes have been capped with waxed cloth or with tin-foil, securely held in place with rubber bands, thus indicating a ready access of atmospheric air in the folds of the tin-foil in spite of precautions to prevent this means of the escape of the carbon dioxide produced by the respiration of the bacilli. Tin-foil capping does not account for the low percentage (27.3) positive cultures obtained by Corper, Fiala and Kallen in cultivating microscopically positive sputums. The addition of "aminoids" beef or casein to the ordinary laboratory glycerol broth has no appreciable effect on the growth

of human tubercle bacilli on this medium; such an addition may even markedly retard the growth of the bacilli as was found to be in the case of beef "aminoids."—E. Louis Goodman and Mary Moore, *Jour. of Inf. Dis.*, 30, 58, (1922).

✣

Laboratory Diagnosis of Whooping Cough.—In 1,665 specimens sent in for examination, the Bordet-Gengou bacillus developed in 970. The work was done at the official Serum Institute at Copenhagen, an aluminum box with the culture material being sent by mail or messenger on demand by mail or telephone. The author gives the details of making the durable potato-glycerin-agar-sugar culture medium to which defibrinated horse blood is added when the box is to be sent out. The patient coughs into the box, but does not expectorate in it. In specimens from the catarrhal stage, the bacilli were found in 75 per cent; in the first week of the spasmodic phase, in 62.5 per cent; second week, 70; third week, 53; fourth week, 47, and fifth week or later, in 16 per cent.—A. H. Meyer, *Acta Pediatrica*, (Stockholm) 1, 99, (1921); *Jour. A. M. A.*, 78, 78, (1922).

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The Pathogenicity of Bacillus Botulinus.—The optimum temperature for growth and elaboration of toxin by *B. botulinus* is that of the body temperature, 37° C. *B. botulinus* can be recovered from the internal organs of animals which have been fed or injected with toxic cultures and also with toxin-free spores of this organism. *B. botulinus*, under certain conditions, will grow and produce toxin in the body of the guinea-pig. Experimental botulism can be produced in laboratory animals by the feeding or injection of massive quantities of toxin-free spores of *B. botulinus*. The presence of toxin produced in the body as a result of growth of toxin-free spores in the body can be demonstrated by the precipitin test as well as by direct toxicity tests. Botulism poisoning in man due to the ingestion of spores is probably very rare, if it occurs at all. The possibility of such occurrence must, however, be considered.—Paul F. Orr, *Jour. of Inf. Dis.*, 30, 118, (1922).

✣

The Auto-Urine Reaction.—The author states that the Wildbolz technic for the auto-urine reaction elicited a positive response only in forty-nine of sixty cases with unmistakable signs of active tuberculosis. In the eleven negative, the intradermal tuberculin test at 1:1,000 and mostly at 1:10,000 yielded a positive reaction. In three of the cases several repetitions of the own urine test finally induced a positive reaction. These experiences and those with ninety other patients free from or suspected of tuberculosis show that the urine in active tuberculosis may be transiently unable to give the specific reaction, but that by repeating the test the reaction may finally be elicited. Analysis of the small group of contradictory findings indicates that the salt content of the urine may modify the response. Hence, the urine should be made free from salt before applying the test, without altering the antigen.—R. Schmid, *Schweiz. med. Wochenschrift*, 51, 996 (1921); *Jour. A. M. A.*, 77, 2095, (1921).

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A Simple Method of Staining Gram-negative Organisms.—A modified Gram stain, without decolorization with alcohol, has been found useful in staining gram-negative organisms, which take ordinary stains with difficulty. The specimen is fixed in the flame, stained three or four seconds with freshly prepared carbolgentian violet solution, 1 part saturated alcoholic gentian violet in 9 parts of 5 per cent phenol (carbolic acid), washed in tap water, treated three or four seconds with Gram's solution of iodin (iodin, 1 gm., potassium iodid, 2 gm., water, 300 c.c.), again washed in water and dried. The organisms stain a purplish black, resembling preparations stained with Fontana's silver stain. Fontana's stain, however, requires more time for staining, and the solutions are difficult to prepare and are unstable.—Ruth Tunnicliff, *Jour. A. M. A.*, 78, 191, (1922).

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Differential Staining of Granules in Bacilli.—Stain films fixed by heat with Neisser's staining fluid No. 1. This consists of methylene blue, 1 gm.; 96 per cent alcohol, 20 c.c.; glacial acetic acid, 50 c.c. and distilled water, 950 c.c. This mixture is allowed to remain on the films for thirty seconds. Wash in water. Apply Gram's iodin solution for ninety seconds. Wash in water. Apply watery solution of saffranin T, 0.5 per cent, for thirty seconds. The granules appear black on a pink background. The picture is sharp, the contrast excellent. The method

is applicable to any bacteria which contain granules, and shows up the granules in diphtheria bacilli exceptionally well.—A. G. Nicholls, *Jour. Lab. Clin. Med.*, 7, 180, (1921); *Jour. A. M. A.*, 78, 244, (1922).

✣

Study of Hemoglobinophilic Bacteria.—From the investigation of thirty-eight strains of B. influenzae obtained from hospital patients during nonepidemic periods the conclusions are drawn by the authors that nearly all strains of B. influenzae possess a serologic individuality as determined by agglutination and agglutinin absorption. Identical strains do occur, but they are not frequent. The antigenic value of strains varies. Some are extremely narrow. The serum prepared from such strains agglutinated little more than the homologous organism. The morphologic variations are marked, but do not correspond to variations in agglutination. Two or more serologic races may be present in the same patient. The results were in accord with those from other laboratories. —H. B. Maitland and G. C. Cameron, *Brit. Jour. Exp. Path.*, 2, 283 (1921); *Jour. A. M. A.*, 78, 246, (1922).

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The Isolation of Koch's Bacillus from Tuberculosis Sputum by Petroff's Method.—The method, which has been used successfully for six years, possesses the great advantage of enabling one to cultivate the bacilli direct from the sputum, instead of having to resort to preliminary animal passage. Briefly, the technic consists in digesting the sputum at 37° C. with 4 per cent sodium hydrate till it is reduced to a perfectly fluid consistency. After centrifugalization, the supernatant fluid is pipetted off, and three or four drops of the sediment are sown on to a few tubes of Petroff's medium, which is made by adding a 1 in 10,000 solution of gentian violet to a mixture of egg with glycerin veal broth. The treatment with soda suffices to dispose of the majority of the organisms likely to be encountered in the sputum, while the more resistant ones are prevented from developing by the action of the gentian violet. The author states that in every case in which tubercle bacilli were found by microscopic examination of the sputum after digestion, he was successful in growing the organism in at least two of the culture tubes inoculated out of the five put up.—Limousin, *Ann. de l'Institut Pasteur*, August, 1921; *Brit. Med. Jour.*, Nov. 12, 1921.

The Excretion of Arsenic After Serial Administration of Arsphenamin and Neo-Arsphenamin.—Arsenic appears in the urine within a few hours after intravenous injection of arsphenamin or neo-arsphenamin. The maximum excretion occurs on the day of or the day after injection. In a series of injections, the maximum excretion is higher with each succeeding dose. In a series of injection, the percentage of arsenic excreted is small in the first interval in both urine and feces, and increases in each injection with each succeeding dose and interval. Arsenic appears in the feces more slowly, but within three or four days after intravenous injection. In a series of injections the total percentage of arsenic excreted in the feces is larger than in the urine, being as high as 53.76 per cent in one week. There is no relation between the amount of arsenic excreted and the quantity of urine or feces. These facts are interpreted to mean that, in the early intervals of the serial treatment with arsphenamin and neo-arsphenamin, the arsenic compounds are retained in the body up to a point at which the tissues are, as it were, saturated with them. When this point has been reached, further additions of the arsenical preparations are in large measure quickly eliminated from the body. If this interpretation is correct, it would seem logical to modify the serial treatment to the extent that smaller doses may be given when the point of saturation has been reached, unless it is at this point that the initial beneficial influence is exerted. Although further study is necessary before a positive conclusion may be drawn, it would appear that the point of saturation is attained at about the fourth injection.—Frank P. Underhill and Staton H. Davis, *Arch. Derm. Syph.*, 5, 40, (1922).

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The Elimination of Arsphenamin and Neo-Arsphenamin in the Urine.—The Abelin test seems to be of real value. This opinion is quite generally shared by those who have employed it. The test is as follows: To 5 c.c. of urine, fresh or preserved with chloroform, in test tube 1, cooled in running water or the icebox, are added 0.5 c.c. of the hydrochloric acid solution and 1 c.c. of sodium nitrite solution. The mixture is well shaken and kept cool until the reaction is complete (about ten minutes). In test tube 2, a fresh mixture of 4 c.c. resorcin so-

lution with 1 c.c. sodium hydroxid solution is prepared. Following Abelin's method, the contents of test tube 1 are added to that of test tube 2 and well shaken, producing a distinct red in the presence of arsphenamin in fairly large amounts and a brown, clear colored solution in the absence of this substance, which soon extends throughout the upper stratum. In this investigation the authors used the ring test. In order to carry it out successfully, the urine is transferred by means of a 5 c.c. pipet from test tube 1 to test tube 2, which is placed in a slanted position to avoid mixing the two solutions. Two distinct layers are formed with an intervening stratum of pink to red, depending on the amount of arsphenamin present; in the absence of arsphenamin no colored ring develops between the two layers. By comparing this colored zone with that produced by solutions of arsphenamin or neoarsphenamin in known quantities in urine the approximate amount excreted can be determined. The slightly modified Abelin test, as employed by the authors, is readily and successfully applied for quantitative results without much difficulty or expense. The sensitiveness of the test is very great. It is only positive in the presence of arsphenamin and its derivatives, the quantity being approximately indicated by the color of the ring. Other chemical substances of the benzene series which may be eliminated did not furnish any positive reactions. Urine from cases of pneumonia, nephritis, rheumatism and gonorrhea did not furnish any positive reactions with this resorcin reaction. The elimination of arsphenamin and its derivatives by way of the urinary tract was slower in most of the authors' cases than in Abelin's series. It was usually complete or nearly so within twenty-four hours after injection. A number of cases tested at later intervals gave, with the exception of those mentioned, uniformly negative findings. Elimination was especially prolonged in the authors' cases of tertiary syphilis and neurosyphilis. The apparently early elimination of these drugs would seem, in certain cases at least, to warrant a shorter interval between injections, as has been suggested by Pollitzer, Sicard and others. In cases of apparent nonelimination of the drug evidenced by a persistently negative Abelin reaction one should, as Leredde suggests, make a careful examination of the patient before continuing with the treatment. Elimination seems to be subject to the influence of a number of factors, among them: (a) the dose injected, (b) the solvent employed, (c) previous treatment, especially by arsphenamin or its derivatives, (d) dietary indiscretion soon after treatment, (e) the personal element. Elimination does not always proceed in a rhythmical manner.—B. Barker Beeson and P. G. Albrecht, *Arch. Derm. Syph.*, 5, 51 (1922).

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Standardization of Biological Stains.—The need of standardizing stains for biological purposes has become increasingly evident during the last four or five years. German stains have been difficult to obtain, or entirely unavailable, and the American products vary so much, one from the other, that they give uncertain results. An interest has been awakened in bacteriologists toward securing domestic stains better than their foreign predecessors.

Under the auspices of the National Research Council, a conference was held at the Chemist's Club, New York City, in November, to discuss the standardization of biological stains and the steps to be taken to develop a reliable American supply. Besides the National Research Council, other organizations represented were: the American Society of Zoologists, the U. S. Department of Agriculture, the Chemical Foundation, the Botanical Society of America, the Society of American Bacteriologists, and the Will Corporation.

H. J. Conn of the Bacteriological Society, stated what had been accomplished among the members of his society during the past year. He stated that stains must be standardized by three different methods: By chemical analysis, by testing for bacterial staining, and by testing for histological purposes. So far as bacterial staining is concerned, he considered his Society to be already in a position to select satisfactory samples of basic fuchsin and methylene blue, and believed that the work now in progress on gentian violet would soon lead to a similar result in regard to that stain. The chemical and histological work still remained to be done. Other bacteriologists agreed that samples that were satisfactory for bacterial staining did not give good results in cytological or histological staining.

To further work along these lines a committee was appointed to function under the

Division of Biology and Agriculture of the National Research Council, with the Division of Medicine coöperating. The Chemical Foundation of New York City has agreed to support the undertaking, and has already deposited with the treasurer of the National Research Council a check for $500.—*Science*, January 13, 1922, Vol. lv, No. 1411.

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Internationalizing Sera Standards.—Confusion due to the various national standards of measuring the strength of antitoxic sera for diseases has been a great handicap to men of science in their study of treatment of different vital diseases. The Health Committee of the League of Nations, at an international conference at London in December, adopted a program which aims at the unification of international standards of antitoxic sera. The coöperation of the foremost laboratories of the world has been secured and work has already been begun. The United States has agreed to coöperate through the United States Public Health Service, and to the Hygienic Laboratory at Washington has been allocated the study of tetanus and diphtheria antitoxins.—*Science*, January 13, 1922, Vol. lv, No. 1411.

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CONVENTIONS, CONFERENCES AND MEETINGS

This calendar is published through the coöperation of the National Health Council, 370 Seventh Ave., New York City. The Council will be glad to answer promptly any written or telegraphic inquiries regarding meeting dates in order to avoid conflicts.

Mar. 6-8, Federation of State Medical Boards of U. S., Congress Hotel, Chicago, Ill.

Mar. 6-9, Association of American Medical Colleges, Congress Hotel, Chicago, Ill.

Mar. 6-10, Annual Congress on Medical Education and Licensure, A. M. A., Congress Hotel, Chicago, Ill.

Mar. 14-15, U. S. Public Health Service Conference on Public Health and Education of Health Officers, Washington, D. C.

Apr. 3-8, American Congress on Internal Medicine, Hotel Kahler, Rochester, Minn.

Apr. 5, Utah Public Health Association, Hotel Utah, Salt Lake City, Utah.

Apr. 10-15, Oregon Annual Conference of City and County Health Officers, Multnomah Hotel, Portland, Ore.

Apr. 17, North Carolina Public Health Association, Winston-Salem, N. C.

Apr. 17-22, New Jersey Conference State and Local Boards of Health, Trenton State House, Trenton, N. J.

Apr. 26-28, American Urological Association, Atlantic City, N. J.

Apr. 29, National Research Council, Division Medical Sciences, Washington, D. C.

May 1-2, American Therapeutic Society, Arlington Hotel, Washington, D. C.

May 1-3, American Pediatric Society, Washington, D. C.

May 1-3, American Gynecological Society, Washington Hotel, Washington, D. C.

May 2-4, American Orthopedic Association, Hotel Washington, Washington, D. C.

May 2-3, American Neurological Association, Washington, D. C.

May 2-4, American Dermatological Association, Washington, D. C.

May 2-3, Association of American Physicians, Hotel Raleigh, Washington, D. C.

May 3, New York State Association of Public Health Laboratories, Albany, N. Y.

May 3-6, American Physical Education Association, Detroit, Mich.

May 4-6, National Tuberculosis Association, Washington, D. C.

May 8-11, American Society of Mechanical Engineers, spring meeting, Atlanta, Georgia.

May 15-19, American Water Works Association, Bellevue-Stratford, Philadelphia, Pa.

May 16-18, Illinois Medical Society, Mt. Vernon, Ill.

May 22-26, American Medical Association, St. Louis, Mo.

June 21, National Conference of Jewish Social Service, Providence, R. I.

June 22-29, National Conference of Social Work, New Biltmore, Providence, R. I.

June 22-24, American Association for the Advancement of Science, summer meeting, Salt Lake City, Utah.

Biennial Congress on Nursing:

June 26-30, American Nurses' Association, Seattle, Wash.

June 26-30, National League for Nursing Education, Seattle, Wash.

June 26-31, National Organization for Public Health Nursing, Seattle, Wash.

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